

NYSEG

FINAL REMEDIAL DESIGN REPORT

Clyde Former Manufactured Gas Plant Site
Clyde, New York
NYSDEC Site No. 859019

May 2019

A large, solid orange geometric shape, resembling a stylized triangle or a section of a larger triangle, is positioned in the bottom right corner of the page. It is composed of two overlapping triangles, creating a complex, angular form that extends from the bottom edge towards the top right corner.

I, Jason D. Brien, certify that I am currently a New York State registered Professional Engineer and that this design was prepared in accordance with all applicable statutes and regulations and in substantial conformance with the DER Technical Guidance for Site Investigation and Remediation (DER-10) and that all activities were performed in full accordance with the DER-approved work plan and any DER-approved modifications.



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FINAL REMEDIAL DESIGN REPORT

Clyde Former Manufactured Gas Plant
Site

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- 2 PDI Geotechnical Results
- 3 PDI Soil Waste Characterization Analytical Results
- 4 PDI Hydraulic Testing Results
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- A Design Drawings
- B Specifications
- C Community Air Monitoring Plan
- D Community and Environmental Response Plan
- E Contingency Plan
- F Noise Monitoring Plan

DIGITAL VERSATILE DISC (Not Part of Contact)

- 1 PDI Laboratory Analytical Reports
- 2 PDI Geotechnical Results
- 3 PDI Soil Boring Logs
- 4 PDI Hydraulic Testing Logs
- 5 Remedial Investigation Report (GEI, 2012)
- 6 Feasibility Study Report (GEI, 2013)
- 7 Record of Decisions (NYSDEC, 2014)
- 8 Historical Soil Boring Logs
- 9 Historical Test Pit Logs

ACRONYMS AND ABBREVIATIONS

| | |
|---------|---|
| ALTA | American Land Title Association |
| bgs | below ground surface |
| BOL | bill of lading |
| BTEX | benzene, toluene, ethylbenzene, and xylenes |
| CAMP | Community Air Monitoring Plan |
| CERP | Community and Environmental Response Plan |
| CFR | Code of Federal Regulations |
| COC | constituent of concern |
| CY | cubic yards |
| DER | Department of Environmental Remediation |
| DNAPL | dense non-aqueous phase liquid |
| DOH | Department of Health |
| DVD | digital versatile disc |
| EC/IC | institutional and engineering control |
| FER | Final Engineering Report |
| FSP | Field Sampling Plan |
| ft/day | feet per day |
| GPR | ground penetrating radar |
| GPS | global positioning system |
| HASP | Health and Safety Plan |
| HSA | hollow-stem auger |
| IDW | investigation derived waste |
| LTTD | low-temperature thermal desorption |
| MGP | manufactured gas plant |
| NAPL | non-aqueous phase liquid |
| NAVD 88 | North American Vertical Datum of 1988 |
| NYCRR | New York Codes, Rules, and Regulations |
| NYS | New York State |
| NYSDEC | New York State Department of Environmental Conservation |

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|--------|--|
| NYSEG | New York State Electric and Gas |
| NYSDOH | New York State Department of Health |
| O&M | operation and maintenance |
| PAH | polycyclic aromatic hydrocarbon |
| PDI | Pre-Design Investigation |
| PID | photo-ionization detector |
| POP | Project Operation Plan |
| PPE | personal protective equipment |
| ppm | parts per million |
| PVC | polyvinyl chloride |
| QAPP | Quality Assurance Project Plan |
| RAO | Remedial Action Objective |
| RCRA | Resource Conservation Recovery Act |
| RD | Remedial Design |
| RDWP | Remedial Design Work Plan |
| RF | radio frequency |
| RI | Remedial Investigation |
| ROD | Record of Decision |
| SCG | standards, criteria, and guidance |
| SCO | Soil Cleanup Objective |
| SMP | Site Management Plan |
| SVOC | semi-volatile organic compound |
| TBD | to be determined |
| TCLP | toxicity characteristic leaching procedure |
| TOGS | Technical and Operational Guidance Series |
| TWA | time-weighted average |
| UCS | unconfined compressive strength |
| VFW | veterans of foreign wars |
| VOC | volatile organic compound |
| WMP | Waste Management Plan |
| WTS | water treatment system |

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WWTP wastewater treatment plant

1 INTRODUCTION

This *Final Remedial Design Report* (RD) has been prepared to support the implementation of the New York State Department of Environmental Conservation- (NYSDEC-) selected remedy for the New York State Electric and Gas (NYSEG) former manufactured gas plant (MGP) site located in the Village of Clyde, New York (the site; Figure 1). The NYSDEC selected remedy to address environmental impacts identified at the site is presented in the February 2014 Record of Decision (ROD) (NYSDEC, 2014).

NYSEG entered into an Order on Consent (#DO-0002-9309) with the NYSDEC in March 1994 to investigate and, where necessary, remediate 33 former MGP sites in New York State. The Clyde former MGP site (Site No. 859019) is included on this list of 33 sites. Section VI of the Order on Consent indicates that NYSEG shall submit to the NYSDEC a remedial design to facilitate implementation of the selected remedial alternative for the site. This RD has been prepared in accordance with the following documents:

- March 1994 Order on Consent
- February 2014 ROD
- NYSDEC Division of Environmental Remediation (DER) *Technical Guidance for Site Investigation and Remediation* (DER-10; NYSDEC, 2010)
- NYSDEC-approved *Remedial Design Work Plan* (RDWP; Arcadis of New York, Inc. [Arcadis], 2017)

Activities identified in this RD will be performed under the approval and oversight of the NYSDEC and New York State Department of Health (NYSDOH).

1.1 Purpose

The purpose of this RD is to present the remedial approach and design for implementing the remedial action for the site. This RD, the associated Design Drawings (Appendix A), Specifications (Appendix B), supporting documents, and supplemental information including the tables, appendices, attachments and exhibits provided herein are collectively referred to hereafter as the Contract Documents.

1.2 Report Organization and Structure

The organization of this RD is presented in Table 1.1 below.

Table 1.1 Report Organization

| Section | Description |
|---|--|
| Section 1 – Introduction | Presents the purpose of the RD, summarizes the report organization, presents a description of the site characterization and nature and extent of impacts, the remedial objectives, and a summary of the remedy components. |
| Section 2 – Basis of Design | Presents a summary of the Pre-Design Investigation (PDI) results, descriptions of the areas of the site requiring remediation, rationale supporting the components/limits of the remedial activities, and assumptions. |
| Section 3 – Organizational Structure and Responsibilities | Presents the responsibilities of NYSEG, the Design Engineer (Arcadis), the Remediation Engineer, and the Remediation Contractor during the implementation of the remedy. |
| Section 4 – Pre-Remediation Activities | Describes the activities to be completed prior to the implementation of the remedial activities. |
| Section 5 – Remediation Activities | Summarizes the remedial tasks to be conducted as part of the selected site remedy. |
| Section 6 – Post-Remediation Activities | Describes the reporting, monitoring, and administrative activities to be completed following remedial construction. |
| Section 7 – Schedule | Presents the anticipated schedule for the RD and implementation of the site remedy. |
| Section 8 – References | Lists select sources consulted as references. |

Additional supporting documents include the following:

- Community Air Monitoring Plan (CAMP).
- Community and Environmental Response Plan (CERP).
- Contingency Plan.
- Noise Monitoring Plan.

Field samples shall be collected and analyzed in accordance with the Quality Assurance Project Plan (QAPP) and Field Sampling Plan (FSP), included in the RDWP (Arcadis 2017). The QAPP and FSP are included on the attached electronic digital versatile disc (DVD).

1.3 Background Information

This section presents a summary of site background information, including a description of the site location and physical setting, as well as a brief site history.

1.3.1 Site Location and Setting

The Clyde former MGP site is located along the west side of Sodus Street (approximately 16 Sodus Street) in the central business district of the Village of Clyde (Figure 1). The site primarily consists of two parcels of land that are owned by NYSEG, herein referred to as the western and eastern parcels.

The NYSEG Clyde Electrical Substation is located on the western parcel. The majority of the former MGP features were in this area. Historical site features, the current substation layout, and underground communications and overhead electric line locations are shown on Figure 2. The substation is surrounded by a perimeter fence and access is limited to NYSEG employees. Inside the substation fence, the ground surface is covered by gravel. Outside of the fenced area to the west and south, the ground surface is covered by weeds, brush, and small trees. To the east and north of the substation, the ground surface is covered by asphalt pavement and a gravel driveway that provides access to the substation from Sodus Street.

The eastern parcel of the NYSEG property was purchased in 2006 and is vacant land covered by weeds, brush, and small trees, except for the gravel access driveway for the substation along the northern side and northwestern corner of the parcel. The foundation for a former gas holder remains within this parcel. The remains of a concrete building foundation (not related to the MGP) is visible at the ground surface at the southeastern portion of the eastern parcel.

Abutting the site to the north are three parcels of land (from east to west): an irregular shaped area of land that forms the southwest portion of a property occupied by the Veterans of Foreign Wars; a vacant lumberyard; and vacant land owned by the Village of Clyde. During the time of MGP operations, the Erie Canal and towpath were present in the southern portions of these three parcels. The Erie Canal channel was filled-in with construction debris by the Village of Clyde in the late 1930's.

To the south of the site is an active railroad corridor operated by the CSX Railroad Company – New York Central Lines, Limited Liability Company. To the south of the railroad corridor is the New York State (NYS) Barge Canal. The section of the NYS Barge Canal in the Village of Clyde is a “canalized” section of the former Clyde River. The former river channel was excavated/modified to form the canal approximately five years following decommissioning of the MGP.

Directly to the east of the site is the Village of Clyde Museum which is operated by the Galen Historical Society. To the southeast of the site is a building which is currently being used as a bottle and can return (redemption) center. Sodus Street is located to the east of these buildings.

To the west of the site is a second parcel of land owned by the Village of Clyde. This parcel is currently vacant land and is covered by weeds, brush, and small trees.

The entire site and all the adjacent offsite parcels discussed above are zoned for Commercial Use (C1 Designation) by the Village of Clyde. The nearest residential property is approximately 360 feet to the north on Columbia Street.

1.3.2 Site History

The Remedial Investigation Report (RI Report; GEI, 2012) contains a chronology of site operations from 1817 to 2006 that was compiled from various sources, including records obtained from NYSEG and the Village of Clyde.

The Clyde MGP was constructed in 1856 and began to supply gas to the Village of Clyde in 1860, when connective gas distribution piping into the Village was installed. During most of this period, gas was manufactured using a coal gasification process by the Clyde Gas Light Company. Just before the plant was shut down it was retrofitted as a carbureted water gas plant. Between 1907 and 1916 most of the above-grade structures for the MGP were removed. Final removal of MGP structures was completed by 1918. NYSEG acquired the MGP parcel in 1936. An electric company building at the site was used as a transformer house until the late 1950's – early 1960's; it was demolished in the late 1960's. The current electrical substation was built in the early 1970's in the western area of the site. Based on available historical information and on sampling performed during the remedial investigation, all of the above-grade MGP structures have been removed as have the below-grade foundations for several of the former MGP structures. The foundations for the MGP Building and the Gas Holder are still present in the subsurface of the site.

There were four structures present during the time of gas production. A gas production building was constructed adjacent to the Erie Canal in the northern portion of the site. The building was subdivided into three areas consisting of: (1) a gas purifying area; (2) a compressor and generator room; and (3) a coal storage area. A gas holder with a below-grade foundation was constructed at a location adjacent to, and to the east of the gas production building. An outbuilding or shed of unknown purpose was present to the south of the gas production building. As stated above, all the above-ground features for the MGP were demolished by 1918.

The surface water features adjacent to or near the site were modified following closure of the MGP. In 1918, the construction of the NYS Barge Canal began, which re-routed commercial barge traffic from the Erie Canal north of the MGP site to the Clyde River located south of the site. Per the Village of Clyde Historical Society, the Village of Clyde filled in the old Erie Canal to the north of the site with construction debris during the late 1930's. Melon Brook to the south of the MGP process area appears to have also been filled-in around this time. The Clyde River to the south of Melon Brook was also extensively modified following closure of the MGP. In 1918, the former river channel was widened and deepened to form the current NYS Barge Canal.

1.4 Site Characterization / Nature and Extent of Impacts

This section presents a summary of the site characterization and the nature and extent of impacted media across the site based on the results obtained from environmental investigations performed between 1991 and 2012, including:

- A preliminary site screening performed by Atlantic in November 1990. The results of the site screening were summarized in the *Task 1 – Manufactured Gas Plant Site Screening Report, Clyde, New York* (Atlantic, 1991).

- A Task II site investigation performed by Atlantic in November 1992. The results of the investigation were summarized in the *Task II – Site Investigation for the Clyde MGP Site, New York* (Atlantic, 1993).
- GEI conducted an RI from 2011 to 2012 to delineate the nature and extent of contamination at the site. The RI activities were summarized in the *Remedial Investigation Report* (GEI, 2012).

These investigations are documented in the RI Report.

The RI Report concluded that constituents of concern (COCs) include benzene, toluene, ethylbenzene, and xylenes (BTEX) and polynuclear aromatic hydrocarbons (PAHs) in site surface soil, subsurface soil, and groundwater. Coal tar non-aqueous phase liquid (NAPL) was also observed in the subsurface soil at the site.

The remainder of this subsection summarizes site topography, geology, hydrogeology, and nature and extent of impacts based on the information obtained during these investigations.

1.4.1 Site Topography

The ground surface is highest at the site's eastern boundary (395 feet North American Vertical Datum 1988 [NAVD88]). The ground surface in the former MGP process area and the NYSEG substation parcel is generally flat with an elevation of approximately 394 feet NAVD88. A slightly lower lying area (elevation 391 feet NAVD88) is located in the south/central area of the site. Similarly, the ground surface in the area identified for remedial action is generally between 392 to 394 feet NAVD88.

1.4.2 Geology

Site geology generally consists of unconsolidated fill and alluvial deposits overlying shale bedrock. Shale bedrock was encountered beneath the alluvium. The stratigraphic units at the site are described below:

- **Fill** – At the majority of the soil boring locations in and around the MGP process area, a layer of fill containing anthropogenic materials was observed. The fill was thickest (approximately 15 feet thick) in the area of the gas holder foundation and at the southern boundary of the site. The fill material was observed to consist mostly of sand and gravel mixed with varying amounts of brick fragments, clinkers, ash, and coal.
- **Alluvium** – Underlying the fill is alluvium comprised of silt, sand, and gravel. The alluvium is a glaciofluvial deposit which was deposited and re-worked by stream action following the last period of glaciation. Laterally continuous units within the alluvium that could potentially act as confining units were not observed.
- **Till** – A thin layer of glacial till was observed beneath the alluvium at several of the boring locations. The till was not observed to be laterally continuous across the site. The till is a dense, reddish-brown clayey silt with some fine sand and rounded gravel.
- **Bedrock** – Shale bedrock was encountered beneath the alluvium or till at depths ranging from 12 feet to 25 feet below ground surface (bgs) across the investigation area. The shale is dark grey to greenish grey in color and has inter-bedded layers of dolomitic limestone and gypsum stringers. The upper portion of the shale (generally 5 to 10 feet) was observed to be highly weathered.

1.4.3 Hydrogeology

No surface water features were reported to be at the site. As described above, the NYS Barge Canal is located south of the site. The RI concluded that the canal is outside the area impacted by MGP-related residuals, and therefore no remedial action is required.

The RI Report indicated that the overburden groundwater flow direction is from the north to the south across the site towards the adjacent railroad corridor parcel. The depth to the groundwater table ranges from 1 to 7 feet bgs (2 to 4 feet bgs in the soil excavation area). The bedrock piezometric surface also slopes from the north to the south. A vertically downward groundwater flow potential was identified from the overburden to the bedrock unit. The piezometric surface in the bedrock in the former MGP process area is approximately 5 feet lower than the elevation of the groundwater table in the overburden.

1.4.4 Nature and Extent of Impacts

The following section describes the nature and extent of the environmental impacts identified at the site. The primary MGP byproduct impacting site media is coal tar (dense non-aqueous phase liquid [DNAPL]). The terms coal tar, DNAPL and NAPL are used interchangeably for the remainder of this document. Principal components of coal tar include BTEX, which are volatile organic compounds (VOCs) and PAHs, which are a 17-compound subgroup of semi-volatile compounds (SVOCs).

As presented in the ROD, the COCs identified for this site are:

- BTEX
- Naphthalene
- Coal tar

These COCs exceed the applicable standards, criteria, and guidance (SCGs) for soil and groundwater. A summary of environmental impacts, by media type, is presented below.

1.4.4.1 Surface Soil

Surface soil is not significantly impacted at the site; no BTEX or other VOCs were detected in any of the onsite surface soil samples at concentrations exceeding the Commercial Use Soil Cleanup Objectives (SCOs) presented in Title 6 of the Official Compilation of Codes, Rules and Regulations of the State of New York (6 NYCRR) Part 375-6.8(b). PAHs were identified in the surface soil samples; however, the concentrations were low and only slightly elevated above the Commercial Use SCOs at several of the sample locations. PAHs were detected at concentrations generally consistent with background concentrations commonly measured for urban areas.

1.4.4.2 Subsurface Soil

Impacted subsurface soil (i.e., subsurface soil with NAPL mixed in the soil matrix, and/or containing COCs at concentrations greater than Commercial Use SCOs) is present in the former MGP production/process area. Impacted subsurface soil was observed from 4 feet bgs to the top of the bedrock in this area. Soil borings have defined the horizontal extent of the impacts. MGP-related NAPL in subsurface soil was not observed outside of the current NYSEG property boundary.

The vertical extent of the NAPL impacts was also delineated during the remedial investigation and confirmed within the excavation area during the PDI. Only limited visible MGP impacts were observed from 15 feet bgs to bedrock. No visual evidence of hydrocarbon residuals (sheens, stains, or NAPL) were observed in any of the bedrock core samples collected. Additionally, no exceedances of BTEX or SVOCs SCOs were reported for RI soil samples submitted for analysis from 15 feet bgs to bedrock, however, several soil samples collected during the PDI (that included soil intervals below 15 feet bgs) identified BTEX or COCs at concentrations exceeding the SCOs.

1.4.4.3 Groundwater

BTEX and/or SVOC COCs were detected in groundwater samples collected from both overburden and bedrock monitoring wells at concentrations greater than the NYSDEC Class GA groundwater standards specified in the NYSDEC's Division of Water, Technical and Operational Guidance Series (TOGS) 1.1.1 document titled *Ambient Water Quality Standards and Guidance Values and Groundwater Effluent Limitations* (NYSDEC 2004), herein referred to as NYSDEC Class GA standards and guidance values. The extent of the impacted groundwater generally corresponds to the area where MGP-related NAPL within subsurface soil was observed, which is located in and around the former MGP process area. Detected COC concentrations rapidly decrease with distance from the former MGP process area to near non-detect concentrations at the southern NYSEG property boundary. Groundwater impacts are generally limited to the NYSEG property, with the exception of one downgradient area on the adjacent railroad corridor. Groundwater is only minimally impacted at this offsite location. Groundwater is not extracted and/or used in the area investigated during the remedial investigation. The Village of Clyde obtains its drinking water from a source located approximately five miles hydraulically upgradient from the site.

1.4.4.4 Surface Water and Sediment

Surface water and sediment sampling was performed in the NYS Barge Canal to the south of the Railroad Corridor parcel. Elevated concentrations of COC were not identified in these media. A pathway for residuals to migrate to the canal area was not identified, and the canal area has been demonstrated to be outside of the area of MGP-related impacts. As identified above, no surface water features were reported to be onsite or within the areas of the remedial action.

1.5 Remedial Action Objectives

As presented in the ROD, the remedial action objectives presented below in Table 1.2 have been established for the site.

Table 1.2. Remedial Action Objectives (RAOs)

| Media | Receptor | RAO |
|-------------|--------------------------|--|
| Groundwater | Public Health Protection | <ul style="list-style-type: none"> Prevent ingestion of groundwater with contaminant levels exceeding drinking water standards Prevent contact with, or inhalation of volatiles, from contaminated groundwater |
| | Environmental Protection | <ul style="list-style-type: none"> Restore ground water aquifer to pre-disposal/pre-release conditions, to the extent practicable. Prevent the discharge of contaminants to surface water Remove the source of groundwater or surface water contamination |
| Soil | Public Health Protection | <ul style="list-style-type: none"> Prevent ingestion/direct contact with contaminated soil Prevent inhalation of or exposure from contaminants volatilizing from contaminants in soil |
| | Environmental Protection | <ul style="list-style-type: none"> Prevent migration of contaminants that would result in groundwater or surface water contamination. Prevent impacts to biota from ingestion/direct contact with soil causing toxicity or impacts from bioaccumulation through the terrestrial food chain |
| Soil Vapor | Public Health Protection | <ul style="list-style-type: none"> Mitigate impacts to public health resulting from existing, or the potential for, soil vapor intrusion into buildings at a site |

1.6 Summary of Selected Remedy

The primary elements of the NYSDEC-selected remedy for the site consists of the following:

1. A remedial design program will be implemented to provide the details necessary for the construction, operation, maintenance, and monitoring of the remedial program.
2. Excavation and offsite disposal of onsite contaminant source areas, including grossly contaminated soil as defined in 6 NYCRR Part 375-1.2(u); soil containing SVOCs exceeding 500 parts per million (ppm); and soils that create a nuisance condition, as defined in Commissioner Policy CP-59, Section G. Approximately 6,000 cubic yards (CY) of soil will be removed from the ground surface to the top of bedrock, and treated offsite. The excavation will require the relocation of overhead and underground utilities and removal of the former MGP building and gas holder foundations.
3. Clean fill meeting the requirements of 6 NYCRR Part 375-6.7(d) will be brought in to replace the excavated soil or complete the backfilling of the excavation and established the design degrades at the site. Onsite soil that does not exceed SCOs, for the use of the site and/or the protection of groundwater, may be used to backfill the excavation below a cover system described in remedy element number 5.
4. In-situ enhanced biodegradation will be employed to treat contaminants in groundwater in an area to be determined following the removal described in remedy element number 2. The biological breakdown of contaminants through aerobic respiration will be enhanced by the placement of an

oxygen additive compound, or similar material, into the subsurface. The method and depth of application will be determined during the remedial design.

5. A site cover will be required to allow for commercial use of the site. The cover will consist either of structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable SCOs. Where the soil cover is required it will be a minimum of one foot of soil meeting the SCOs for cover material as set forth in 6 NYCRR Part 375-6.7(d) for commercial use. The soil cover will be placed over a demarcation layer as necessary, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer. Any fill material brought to the site will meet the requirements for the identified site use as set forth in 6 NYCRR Part 375-6.7(d).
6. Imposition of an institutional control in the form of an environmental easement for the controlled property that:
 - a) Requires the remedial party or site owner to complete and submit to the Department a periodic certification of institutional and engineering controls in accordance with Part 375-1.8(h)(3);
 - b) Allows the use and development of the controlled property for commercial and industrial uses as defined by Part 375-1.8(g), although land use is subject to local zoning laws;
 - c) Restricts the use of groundwater as a source of potable or process water, without necessary water quality treatment as determined by the NYSDOH or County Department of Health (DOH); and
 - d) Requires compliance with a Department-approved Site Management Plan (SMP).
7. An SMP is required, which includes the following:
 - a) an Institutional and Engineering Control (IC/EC) Plan that identifies all use restrictions and engineering controls for the site and details the steps and media-specific requirements necessary to ensure the following institutional and/or engineering controls remain in place and effective:
 - Institutional Controls: The Environmental Easement discussed in Paragraph 6 above.
 - Engineering Controls: The site cover discussed in Paragraph 5 above.
 - This plan includes, but may not be limited to:
 - an Excavation Plan that details the provisions for management of future excavations in areas of remaining contamination;
 - a provision for evaluation of the potential for soil vapor intrusion for any buildings developed on the site in the future, including provisions for implementing actions recommended to address exposures related to soil vapor intrusion;
 - descriptions of the provisions of the environmental easement, including any land use and groundwater use restrictions;
 - provisions for the management and inspection of the identified engineering controls;
 - maintaining site access controls and Department notification; and

- the steps necessary for the periodic reviews and certification of the ICs and/or ECs;
- b) a Monitoring Plan to assess the performance and effectiveness of the remedy. The Plan includes, but may not be limited to:
 - monitoring of groundwater to assess the performance and effectiveness of the remedy;
 - monitoring for vapor intrusion for any buildings developed on the site, as may be required by the Institutional and Engineering Control Plan discussed above;
 - a schedule of monitoring and frequency of submittals to the Department;
 - maintaining site access controls and Department notification; and
 - providing the Department access to the site and operation and maintenance (O&M) records.

2 BASIS OF DESIGN

As indicated in the ROD, the major components of the selected site remedy generally include removal of MGP-impacted soil and construction of a soil cover system. This section describes the PDI activities, the limits of soil removal, and the soil cover system. A PDI summary is presented below followed by the basis of design, the scope and extent of the remedy components, and assumptions.

2.1 Pre-Design Investigation

A PDI was performed by Arcadis on behalf of NYSEG from November 27 through December 14, 2017 to collect data to support the remedial design in accordance with the NYSDEC-approved RDWP (Arcadis, 2017). The PDI field tasks included:

- Utility evaluation and mapping
- Geotechnical soil sampling
- Soil disposal pre-characterization
- Hydraulic testing and sampling
- Investigation derived waste (IDW) characterization
- Site survey

The objective of the PDI was to collect information to support the preparation of the remedial design. Descriptions of the PDI field methodologies are included in Section 2 of the RDWP. No significant deviations from the scope of work presented in the RDWP were required during implementation of the PDI.

The objectives of the PDI were achieved during the field activities. Results from the PDI are summarized below.

2.1.1 Utility Evaluation and Mapping

Utility location tasks were performed to identify, mark, and document the presence and location of overhead and subsurface utilities that may impact the construction of the NYSDEC-selected remedy. Utility location methods included:

- A detailed visual site inspection to confirm utilities identified on previously prepared site drawings.
- Subsurface utility mark-out by representatives of utility owners in response to a Dig-Safely New York ticket request.
- Geophysical surveys consisting of ground penetrating radar (GPR) and radio frequency (RF) detection techniques by a private utility locating service (TREC Environmental, Inc. of Spencerport, New York) to identify and mark the location of underground utilities and obstructions at and in the immediate vicinity of onsite PDI soil borings as well as within the proposed excavation area.
- Potholing of utilities to verify their location and depth.

The subsurface utility identification activities described above were completed prior to initiating PDI drilling activities. Locations of the overhead electric lines and the underground telecommunication line identified were documented by land survey performed by Fisher Associates of Rochester, New York. Locations of the utilities are shown on the Figure 2.

2.1.2 Geotechnical Soil Testing

As described in the RDWP, four geotechnical soil borings (GTSB-1 through GTSB-4) were drilled at locations along the anticipated perimeter of the excavation area to obtain geotechnical data required to evaluate excavation conditions and design the excavation support system, after utility evaluation was completed. Drilling was performed by Nothnagle Drilling, Inc. of Scottsville, NY (Nothnagle) using a combination of hollow stem auger (HSA) with continuous split-spoon sampling in the overburden and weathered bedrock. Once the more competent and moderately weathered bedrock was encountered, bedrock coring was completed to a minimum depth of 10 feet into bedrock. Detailed descriptions of the HSA and rock coring methodologies are included in the RDWP. The locations of the four geotechnical borings are shown on Design Drawing C-101. Each soil boring was backfilled with grout upon completion. Soil cuttings were staged in drums onsite for future management and disposal.

An Arcadis representative observed the drilling activities. Soil recovered from each sample interval was visually characterized for color, texture, and moisture content and field screened with a photoionization detector (PID). The presence of visible staining, sheen, product, and obvious odors encountered in the soil was also noted in the boring logs.

A total of four bulk overburden soil samples and five bedrock core samples were submitted to Geotechnics, Inc. located in East Pittsburgh, Pennsylvania for geotechnical analyses, in accordance with the RDWP. Selected overburden samples were submitted for geotechnical analysis of water content, sieve, and Atterberg Limits. A total of five bedrock samples were submitted for analysis of unconfined compressive strength (UCS) by American Society for Testing and Materials (ASTM) D7012 Method C. A sample summary is included as Table 1. Geotechnical laboratory results are presented in Table 2.

The top of weathered bedrock was encountered at depths of 11 feet bgs (GTSB-1) to 20 feet bgs (GTSB-3). The total depths of the geotechnical soil borings ranged from 29 to 39 feet bgs. Residually impacted material was identified at GTSB-3 (12 to 13 and 15 to 22 feet bgs), but no grossly MGP-impacted material was identified in the geotechnical borings. Each soil boring was backfilled with grout upon completion.

2.1.3 Soil Disposal Pre-Characterization

In-situ soil samples were collected within the excavation limits and submitted for laboratory analyses to characterize soil for disposal purposes and facilitate direct-loading of excavated materials during the remedial activities. Waste characterization soil samples were collected from the overburden materials from three geotechnical soil borings (GTSB-1, GTSB-2, and GTSB-4) and four additional waste characterization borings (SB-24 through SB-27). The locations of soil borings SB-24 through SB-27 are also shown on Design Drawing C-101. The four additional waste characterization borings were drilled to the top of bedrock (ranging from 13 to 13.9 feet bgs) using HSA drilling techniques to collect overburden soil samples for laboratory analysis. Following collection of the waste characterization samples, the additional soil borings were drilled into the bedrock (to depths of 15 to 31 feet bgs) and confirmed no visible impacts were identified in bedrock.

The overburden soil samples were submitted to SGS Laboratory located in Dayton, New Jersey (SGS) for laboratory analyses. The samples were analyzed for the parameters required by landfill disposal (Seneca Meadows Landfill Facility) and low-temperature thermal desorption (LTTD) facilities (ESMI of New York located in Fort Edward, New York [ESMI]). A PDI sample summary is included as Table 1. Soil boring logs are included on the attached DVD.

No constituents were identified in the soil samples at concentrations exceeding the regulatory limits for a Resource Conservation Recovery Act (RCRA) characteristic hazardous waste presented in 6 NYCRR Part 371. The toxicity characteristic leaching procedure (TCLP) and LTTD treatment/disposal waste characterization analytical results for soil are presented in Table 3.

Cross-sections were developed to show the soil within the excavation limits are included on Design Drawing C-201. Based on results of the PDI, approximately 5,110 CY of soil will be excavated from within the excavation limits. The estimated volumes of soil anticipated for offsite treatment/disposal or onsite re-use as backfill, are presented in Section 5.10.1.

2.1.4 Hydraulic Testing

Specific capacity tests were conducted at eight existing overburden/bedrock monitoring well pairs (i.e., four overburden wells and four bedrock wells) on December 13 to 14, 2017. The well pairs included MW-4/MW-6B, MW-9/MW-9B, MW-10/MW-10B, and MW-11/MW-11B. Results from the steady-state drawdown testing were analyzed using a methodology presented by Robbins et al. (2009) and Aragon-Jose et al. (2011) for estimating hydraulic conductivity from low-flow sampling results. The radial flow model and/or half ellipsoid model solutions for wells fully submerged and/or screened right above a confining layer (shale), respectively, were used to estimate the hydraulic conductivity values at the wells. Monitoring well MW-4 was used rather than MW-6 as specified in the RDWP because MW-6 could not be located. The well construction details were reviewed by Arcadis and MW-4 was considered an acceptable alternative overburden well for hydraulic testing.

Hydraulic conductivity values (i.e., K values) for overburden wells ranged from 0.3 to 5.7 feet per day (ft/day) at three of the four wells (MW-9, MW-10, and MW-11). The K value was calculated to be 96 ft/day at MW-4. Exact K values for each deep well could not be calculated because the well yields were too low, and the K values were lower than the testing limit (note that a low-flow specific capacity test method was used for the field testing). Based on the test method and the flowrates that were not sustainable, the estimated K values in the bedrock are estimated to be less than 3×10^{-2} ft/day. A summary of the hydraulic testing results is included in Table 4. Hydraulic testing logs are included on the attached DVD.

2.1.5 Water Treatment System Sampling

Dewatering will be required during soil excavation activities and it is anticipated that treatment of the water may be required prior to discharge or disposal. A total of two groundwater samples were collected from two wells (MW-10 and MW-10B) within the proposed excavation limits following specific-capacity testing. Samples were collected using low flow sampling techniques and submitted to SGS for laboratory analyses presented in Table 1 to support the design of a groundwater treatment system and potential permit requirements for discharge of the water. The analytical results are summarized in Table 5 and also included on the attached DVD. The test results were used to support the development of the treatment system requirements.

2.1.6 Site Survey

Field survey activities were performed as part of the PDI by a New York State-licensed land surveyor (Fishers Associates of Rochester, New York). The survey activities were performed using conventional survey and global positioning system (GPS) techniques to accomplish the following:

- Complete a boundary survey compliant with American Land Title Association (ALTA) standards.
- Document locations of overhead and subsurface utilities (in and around the proposed soil remedial activities), as identified and marked in the field by the utility locators and personnel performing a geophysical survey.
- Document final PDI soil boring locations.
- Prepare topographic mapping to show ground surface elevation contours (1-foot contours) in and around the proposed remedial limits (for later evaluation during Remedial Design and use on Contract Drawings). This included surveying locations for fence lines, gravel/stone driveways, and other features around the site.

Each of the objectives identified above was achieved by the PDI survey activities.

2.1.7 IDW Characterization

Solid and liquid wastes generated during the PDI were containerized in 55-gallon or 500-gallon polyethylene tanks, respectively. At the completion of the PDI activities, composite samples of the solid and liquid wastes were collected for waste characterization analyses for disposal purposes.

2.2 Basis of Design for Remedial Activities

As described above, the primary remedial components of the site remedy include:

- Excavating soil containing MGP-related impacts
- Enhancing biodegradation by amending backfill
- Constructing a soil cover system

Results of the PDI were used to refine the scope of the remedial activities to be conducted at the site, as discussed in the following subsections.

2.2.1 Soil Excavation

Soil excavation will be conducted to address MGP-impacted source material, including:

- Soil containing visible tars or oils (visual MGP-related impacts in quantities greater than slight/trace sheens, staining, or isolated blebs).
- Soil containing total PAHs at a concentration greater than 500 ppm.
- Soil that creates a nuisance condition, as defined in Commissioner Policy CP-59, Section G.

The proposed soil excavation limits presented in the ROD were further defined using the PDI and RI data to include removal of soil within the NYSEG property to the nearest soil boring with no MGP-impacted source material. Factors considered for establishing the excavation limits include the following.

- Existing Electrical Substation Set-back Distances** – The remedial activities will be performed adjacent to an active electrical substation. For protection of the substation foundations, their surrounding supporting soil, and the electrical grounding grid, the excavation activities will be outside of the zone of influence of substation's electrical equipment foundations, approximately 20 feet from the nearest substation structure. Excavation activities will be conducted within an excavation support system that will also provide continual support to the substation foundations and other surface components. Utility set-back distances will be maintained during the remedial construction. The Contractor shall abide by the minimum approach distances for the energized overhead electric lines, which are 34.5 kilovolt (kV), and exposed energized circuits within the substation (4.8 to 34.5 kV) for unqualified persons as set forth in OSHA 29 CFR 1910.333(c)(3)(i)(A). The Contractor shall also maintain a minimum set-back of 5 feet from the electrical substation security fence and 2 feet from the electrical substation grounding grid, based on constructability, health and safety considerations, and/or protection of the existing structures during the remedial activities.
- Excavation Support** – The removal area is anticipated to include excavation to a maximum depth of approximately 20 feet bgs and is located immediately adjacent to an active electrical substation and adjacent overhead utilities. An excavation support system is required to support the surrounding soil and to provide an effective means of groundwater control. Sheet pile, soldier pile and lagging, gravity walls, or a combination of these options, were considered for potential use based on the required excavation depths, proximity of the excavations to existing structures, and groundwater control. A cantilever soldier pile wall with lagging and a hydraulic barrier wall was selected to: (1) achieve the required embedment depths to support the excavation bracing; (2) eliminate interior bracing to allow for a more open area for conducting the excavation and backfilling activities; and (3) minimize groundwater infiltration. Additional details related to the excavation support system are included in Section 5.9.

The excavation activities will include removal of soil at depths below the water table and will be excavated within the limits of excavation support. For design purposes, the soil will be excavated to the nearest soil boring exhibiting no MGP source material, soil containing PAHs greater than 500 ppm within the NYSEG property, or the required electrical substation offset. Sidewall confirmation sampling and visible evaluation of clean sidewalls is not feasible during excavation, as the excavation support system and hydraulic barrier will prevent access to sidewalls. The excavation bottom (i.e., weathered bedrock) will be visually observed for the presence/absence of MGP source material, to confirm removal of MGP source material or note conditions that may remain following the completion of the remedial actions. Excavation bottom sampling and additional excavation of weathered bedrock is not feasible; photographs of the bedrock surface will be used to document conditions.

The remedial action includes excavation to depths of approximately 13 to 20 feet bgs, which corresponds to the upper surface of weathered bedrock. The details (sidewall limits, depths, etc.) for the removal area is provided in Table 2.1 below. Waste characterization analytical results collected during the PDI indicate the soils do not exhibit the characteristics of a RCRA hazardous waste.

Table 2.1 Removal Area Limits

| Excavation Limit | Endpoint | Rationale |
|------------------|-------------------|---|
| North | GTSB-4 | <ul style="list-style-type: none"> • No Grossly MGP-Impacted Material Observed • Total PAH Analytical Results < 500 ppm onsite |
| | Property Boundary | |
| East | BCSB-11 | <ul style="list-style-type: none"> • No Grossly MGP-Impacted Material Observed • Total PAH Analytical Results < 500 ppm |
| | BCSB-15 | |
| | Gas Holder | |
| South | BCSB-4 | <ul style="list-style-type: none"> • No Grossly MGP-Impacted Material Observed • Total PAH Analytical Results < 500 ppm |
| | GTSB-1 | |
| | SB-3 | |
| West | BCSB-8 | <ul style="list-style-type: none"> • No Grossly MGP-Impacted Material Observed • Total PAH Analytical Results < 500 ppm • Offset from substation limits (NYSEG Requirement) |
| | SB-3 | |
| | Substation | |

2.2.2 Backfill Amendment

The ROD requires the addition of a groundwater amendment to backfill materials within the saturated zone as well to enhance biodegradation of dissolved phase COCs. Based on the a review of commercially available groundwater amendments and previous experience, IXPOR® 75C Calcium Peroxide manufactured by Solvay Chemicals (IXPER 75C) (or Design Engineer-approved equal) has been selected to be added with backfill material as the groundwater amendment for the site based on the product's longevity (i.e., ability to serve as a source of oxygen over a longer period of time [4 to 9 months]), amount of oxygen available (i.e., approximately 17% by weight), and cost-effectiveness. The groundwater amendment will enhance the growth of microorganisms that can degrade dissolved phase COCs. Product information is included on the attached DVD. A backfill amendment application rate of 5% by weight will be required, based on previous experience. Details regarding the addition of the groundwater amendment to backfill material are presented in Section 5.13.1.

Following the removal of material exceeding site cleanup objectives (i.e., the source of dissolved phase impacts), dissolved phase concentrations of BTEX and PAHs are expected to naturally degrade. As described in Section 1.4.4.3, dissolved phase concentrations of COCs have previously been detected at concentrations greater than TOGS 1.1.1 standards and guidance values primarily corresponding to the former MGP-process area. The concentrations of COCs rapidly decrease with distance from the former MGP process area to near non-detect levels at the southern NYSEG property boundary.

The excavation area is located hydraulically upgradient of the southern NSYEG property boundary and dissolved phase groundwater impacts observed south of the excavation area will be addressed through the addition of an amendment to backfill materials in the excavation area. Impacted groundwater within the excavation area will be removed during excavation activities and backfill materials will include a backfill amendment.

As presented in Section 5.13, groundwater amendments will be initially mixed with removal area backfill materials placed in the saturated zone of the excavations. No amendment will be mixed with backfill from

ground surface to 5 feet bgs to minimize the impacts to biota within the habitable zone (e.g., increase in pH due to the amendment).

2.2.3 Surface Soil Excavation and Cover System

The ROD requires the removal of surface soil and construction of a soil cover system to the limits presented in the ROD and shown on Design Drawing C-101. Surface soil excavation and cover system construction will include:

- Removing a minimum of 1 foot of soil or stone/gravel
- Placing a demarcation layer
- Backfilling the excavation with imported soil meeting commercial-use SCOs or gravel/stone

The proposed limits of the surface soil excavation and cover system area is bound to the north and south by the NYSEG property limits, to the west by the electrical substation and the existing stone/gravel cover area (and surface soil sample SS-2 slightly further to the west), and the east by the NYSEG property limits and surface soil samples with concentrations less than commercial use SCOs (SS-5 and SS-11).

2.3 Assumptions

The following assumptions have been made to facilitate the development of this RD:

- Relocation of all overhead and underground electrical utilities within the work area will be completed prior to initiation of the remedial action.
- Access will be required on the property owned by the Veterans of Foreign Wars (VFW) Post 947 to construct a temporary access road and stage remedial support facilities (e.g., frac tank, equipment trailer). NYSEG will secure all necessary access agreements to implement the remedial construction activities presented herein.
- Pre-remediation in-situ soil sampling has been conducted to obtain waste characterization analytical data to satisfy the requirements of potential offsite treatment/disposal facilities (to minimize staging of excavated material and facilitate direct loading of material destined for offsite treatment/disposal). Results of the pre-remediation in-situ soil sampling are presented in Section 2.1.3.
- Excavation will be completed using an excavation support system. The limits of the excavation area are supported by the results from the PDI and the site RAOs (presented in Section 1.5). No excavation sidewall or bottom endpoint samples will be collected from the excavation area.
- Non-visibly MGP-impacted surface soil and stone/gravel will be stockpiled for potential re-use as subsurface backfill, pending laboratory analysis.

3 ORGANIZATIONAL STRUCTURE AND RESPONSIBILITIES

NYSEG, NYSDEC, NYSDOH, Arcadis, the Remediation Contractor, and Remediation Engineer (both Remediation Contractor and Remediation Engineer to be determined in the future on the basis of competitive bid procurement) will participate jointly to implement the remedial activities described in this document. NYSEG has the ultimate responsibility for implementing all aspects of the remedial activities. NYSDEC and NYSDOH personnel are anticipated to be onsite periodically to observe work activities. NYSEG's Remediation Contractor will be responsible for all onsite remedial construction activities, unless explicitly stated in the Contract Documents. The construction activities will be observed by the Remediation Engineer for compliance with the RD and Contract Documents. Communication with regulatory agencies and with members of the surrounding community will be managed by NYSEG and the Remediation Engineer.

Key personnel for NYSEG, NYSDEC, NYSDOH, Arcadis, Remediation Engineer, and Remediation Contractor are identified in Table 3.1 below.

Table 3.1. Key Project Personnel

| Name/Affiliation | Address | Contact Information |
|---|--|---|
| NYSEG | | |
| Mr. John J. Ruspantini, CHMM, PMP Manager – Programs/Projects | P.O. Box 5224 Binghamton, NY 13902 | T: 607.762.8787 jruspantini@nyseg.com |
| NYSDEC | | |
| Mr. Michael Squire Assistant Engineer | 625 Broadway Albany, NY 12233 | T: 518.402.9546 michael.squire@dec.ny.gov |
| NYSDOH | | |
| Mr. Anthony Perretta Public Health Specialist | Empire State Plaza Corning Tower Room 1787 Albany, NY 12237 | T: 518.402.7860 anthony.perretta@health.ny.gov |
| Design Engineer: Arcadis | | |
| Mr. Bruce W. Ahrens Project Manager | 295 Woodcliff Drive Third Floor, Suite 301 Fairport, NY 14450 | T: 585. 662.4034 bruce.ahrens@arcadis.com |
| Mr. Jason Brien, P.E. Engineer of Record | One Lincoln Center 110 West Fayette Street Suite 300 Syracuse, NY 13202 | T: 315.671.9114 jason.brien@arcadis.com |
| Remediation Engineer | | |
| To be determined (to be determined TBD) | | |
| Remediation Contractor | | |
| To be determined (TBD) | | |

A summary of the key project responsibilities for monitoring and sampling is provided in Table 3-2 below.

Table 3.2. Project Responsibilities for Procurement, Monitoring, and Sampling

| Task | NYSEG | Remediation Engineer | Remediation Contractor |
|--|-------|----------------------|------------------------|
| Procurement of Remediation Engineer and Remediation Contractor | X | | |
| Procurement of Analytical Testing Laboratory | | X | |
| Procurement of Transporter(s) of the Thermal Treatment/Disposal Facility (soil exhibiting gross MGP impacts) | X | | |
| Procurement of Waste Transporter(s) and Non-Hazardous Disposal Facility(ies) (for all other project related waste streams) | | | X |
| Survey Control | | | X |
| Community Air Monitoring | | X ¹ | |
| Geotechnical (i.e., vibration and settlement) Monitoring | | | X ² |
| Sampling for Imported Material Characterization | | X | |
| Sampling for Solid/Liquid Waste Characterization | | X | |

Notes:

¹ Monitoring to be performed in accordance with the CAMP (Appendix C). Remediation Engineer to provide daily CAMP reports in accordance with the Contract Documents.

² Remediation Contractor to provide, install, and maintain geotechnical monitoring equipment, and provide daily reports of the data in accordance with the Contract Documents.

In addition to the requirements summarized in Table 3-2, the minimum responsibilities of NYSEG, the Design Engineer, the Remediation Engineer, and the Remediation Contractor for work to be conducted prior to, during, and following implementation of the remedial activities at the site are presented in the following subsections.

3.1 NYSEG Responsibilities

NYSEG will be responsible for the following:

- Coordinating with the Remediation Contractor, Design Engineer, and Remediation Engineer (as necessary) to implement the required work activities in conformance with the RD.
- Securing access agreements to facilitate the remedial activities on properties not owned by NYSEG, if any.
- Coordinating all overhead electrical utility relocation activities, as necessary.

- Coordinating underground electrical (grounding) utility relocation, as necessary.
- Issuing contract addenda (if any) and modifications (if any) based on input from the Remediation Engineer.
- Acting as the “Generator” for material resulting from the remedial activities for offsite treatment and/or disposal of the waste.
- Endorsing bills of lading/manifests for the offsite shipment of waste materials from the site. The responsibility for endorsement of these shipping documents shall be delegated to the Remediation Engineer to sign as an “Agent For” NYSEG under a separate agreement between the parties.
- Coordinating with the NYSDEC and NYSDOH regarding environmental-related work activities.
- Communicating with the Remediation Engineer regarding the remedial activities.

3.2 Design Engineer Responsibilities

The Design Engineer will provide the following services prior to implementation of the remedial activities:

- Assisting NYSEG with preparation of this RD.
- Assisting NYSEG with attaining construction related regulatory permits (if any) required prior to remedial construction mobilization.
- Assisting NYSEG, Remediation Engineer, and Remediation Contractor with any interpretations or clarifications needed during the bidding process and implementation of this RD.
- Issuing formal design modifications (if necessary) signed and sealed by a New York State Licensed Professional Engineer.
- Assisting NYSEG with community relations and stakeholder communications prior to implementation of the remedial activities.
- Preparing the Remediation Contractor and Remediation Engineer bid documents and evaluating bids.
- Obtaining a permit (if necessary) from the Clyde Wastewater Treatment Plant (WWTP) to discharge project-related construction and storm water that accumulates in contaminated areas (following onsite treatment).

3.3 Remediation Engineer Responsibilities

The Remediation Engineer will provide the following services during implementation of the remedial activities:

- Assisting NYSEG and the NYSDEC in preparing and sending a Notice and Fact Sheet consistent with NYSDEC Program Policy DER-23, Citizen Participation Handbook for Remedial Programs (NYSDEC, 2010a).
- Reviewing Remediation Contractor submittals, requests for interpretation and clarification, and change orders and provide comments, if any, to the Remediation Contractor and NYSEG.

- Contracting with a third-party engineering firm to conduct pre- and post-remediation structural surveys.
- Initiating field orders, work change directives, and proposal requests.
- Providing experienced and qualified project management and fulltime onsite oversight to observe and monitor remedial activities. The Remediation Engineer shall have stop-work authority to facilitate inspection of completed work and address health and safety concerns, as needed.
- Maintaining records of the work efforts associated with implementation of the remedial activities, including daily field reports and digital photographs of the work in progress and documentation of observations, problems, and deficiencies.
- Maintaining records of labor, materials, and equipment utilized for the remedial activities and any unusual circumstances, if any are encountered.
- Documenting that the remedial activities are conducted in general conformance with the RD and Contract Documents and notify NYSEG of any deviations.
- Coordinating with potential disposal facilities to verify waste characterization analytical requirements prior to collecting supplemental waste characterization samples, if needed.
- Reviewing the Remediation Contractor's daily geotechnical data and monitoring reports (e.g., vibration and displacement data).
- Monitoring the Remediation Contractor's survey control for evaluating performance of the remedial action in compliance with this RD and payment quantities, as applicable.
- Reviewing and signing (as an authorized agent for NYSEG) waste manifests/bills of lading (BOLs) for shipments of waste materials generated by the remedial activities.
- Maintaining an onsite project log in consultation with the Remediation Contractor that summarizes and tracks type and quantity of waste streams generated by the remedial activities.
- Assisting NYSEG in the review of Remediation Contractor invoices/requests for payment.
- Coordinating, attending, and documenting onsite project meetings, a pre-construction meeting, daily coordination/site safety (tailgate safety) meetings, weekly construction progress meetings, pre-final inspection (punch-list) meeting, and final inspection/project close-out meeting.
- Providing a sampling technician to collect environmental samples and conduct community air monitoring in accordance with the CAMP.
- Conducting soil and water characterization sampling, as needed. Sampling technician shall also collect confirmatory samples, if any.
- Preparing waste profiles for signature by NYSEG.
- Preparing an SMP to detail the post-remedial action activities to be conducted at the site (as discussed in Section 6.1).
- Assisting NYSEG with preparation of an environmental easement (as discussed in Section 6.2)

- Preparing (and certifying) a Final Engineering Report (FER) to document completion of the construction activities (as discussed in Section 6.3).
- Providing NYSEG with support to resolve any issues during remedial construction.

3.4 Remediation Contractor Responsibilities

In general, the Remediation Contractor is responsible for providing all supervision, labor, equipment, and materials needed (unless otherwise noted) to implement the activities described in the Contract Documents which includes this RD, the Design Drawings, Specifications, and supporting documents and supplemental information provided herein. Additional Remediation Contractor's responsibilities include:

- Verifying all existing site conditions. Failure by the Remediation Contractor to understand and verify all existing site conditions shall not result in additional charges to NYSEG.
- Thoroughly reviewing and understanding the Contract Documents which includes this RD, the Design Drawings, Specifications, and supporting documents and supplemental information provided herein. Nothing presented in one of the above documents or drawings should relieve the Remediation Contractor's obligation to satisfy the components specified in the other documents/drawings. The Remediation Contractor shall present in writing to NYSEG and the Design Engineer any noted discrepancies in the information contained in the above-listed documents/drawings.
- Preparing, submitting, and revising (as necessary based on the Remediation Engineer's comments and at no additional cost to NYSEG) all plans, permits, and information required in this RD.
- Providing bills of lading/manifests for the offsite shipment of waste materials from the site. These shipping documents shall be provided to the Remediation Engineer to complete and sign on behalf of NYSEG (under agreement with NYSEG).
- Providing certifications/licenses for equipment operators that verify that training requirements have been met.
- Implementing the activities described in this RD in a safe manner and in accordance with applicable federal, state and local laws, rules and regulations.
- Attending onsite project meetings, including a pre-construction meeting, daily site safety (tailgate safety) meetings, weekly construction progress meetings, pre-final inspection (punch-list) meeting and final inspection/project close-out meeting.
- Conducting and documenting daily coordination meetings.
- Performing land survey activities to mark proposed removal limits, maintain excavation control and document final removal areas and surface soil cover limits.
- Providing facilities (e.g., office space, phone and fax access) for NYSDEC's and Remediation Engineer's onsite personnel for the duration of the remedial activities.
- Handling, staging, and containerizing all waste materials generated by the activities described in this RD.

- Covering soil/waste material stockpiles using a low-permeability liner (10-mil polyethylene sheeting or equivalent) at all times, except when actively managing soil in the staging area(s), to minimize potential migration/siltation of material/debris to areas beyond the staging area(s). In addition, the Remediation Contractor shall cover rolloff waste containers (if used) with a water-tight tarp at the end of each work day, during precipitation events, and after filling the containers. The rolloff waste containers (if used) shall be lined with poly sheeting.
- Coordinating with NYSEG and the Remediation Engineer, as necessary, to complete required work activities.
- Coordinating transportation (e.g., scheduling of trucking and providing blank waste manifests) with waste haulers and waste disposal vendors. Contracting with all waste haulers (with the exception of the thermal treatment/disposal facility for grossly impacted MGP soil). Obtaining waste hauler permits and disposal facility approvals as necessary.
- Reviewing NYSEG's safety requirements.
- Notifying the Remediation Engineer and NYSEG immediately upon discovery of a conflict between the Contract Documents and actual site conditions.
- Obtaining local construction related permits.

4 PRE-REMEDIATION ACTIVITIES

The following pre-remediation activities will be conducted by NYSEG, Remediation Engineer, or Remediation Contractor prior to the initiation of remedial construction.

- Assisting NYSDEC with preparing a citizen participation Notice and Fact Sheet
- Obtaining regulatory and local permits, access agreements, and other approvals
- Performing a pre-remediation structural survey
- Preparing pre-mobilization submittals

The purpose of the pre-remediation activities is to coordinate with the local community and officials to facilitate initiation of the remedial activities. Additional information regarding the pre-remediation activities is provided in the following subsections.

4.1 Citizen Participation

Consistent with NYSDEC Program Policy DER-23, Citizen Participation Handbook for Remedial Programs (NYSDEC, 2010a), the Division of Environmental Remediation's Project Manager has overall responsibility for ensuring the coordination, planning, and implementation of the DER's citizen participation program. Prior to implementing the remedial action, the DER Project Manager will prepare a Notice and Fact Sheet that will be sent to the site contact list (i.e., residents and business owners within a specified radius of the site, as well as additional community and political personnel) before field work begins. The Remediation Engineer will assist NYSEG and the NYSDEC (as appropriate) to develop the Notice and Fact Sheet that will be sent to parties on the site contact list and to the document repository. The Fact Sheet will describe the planned remediation work.

4.2 Permitting and Access Agreements

Based on the remedial activities to be conducted at the site and information currently available, the following agreements/authorizations, permit(s), and/or notifications have been identified, at a minimum, as potentially applicable to the remedial activities:

- Access Agreement/Notification – Access agreements and/or notifications will be required to facilitate remedial construction activities along the northern excavation limit.
- Clyde WWTP Discharge Permit – A permit will be required to discharge treated construction water and storm water that accumulates in contaminated areas to an onsite sanitary sewer manhole, as appropriate.

NYSEG will be responsible for obtaining access agreements prior to the remedial construction activities. The Design Engineer will be responsible for obtaining the wastewater discharge permit from the Clyde WWTP. NYSEG will satisfy notification requirements and obtain applicable review required by the NYSDEC. As indicated in Section 5.4, the Remediation Contractor shall be responsible for obtaining any additional local permits necessary to complete the remedial construction activities.

4.3 Pre-Remediation Structural Survey

Prior to the Remediation Contractor's mobilization, the Remediation Engineer shall contract with a third-party engineering firm to conduct pre- and post-remediation structural surveys at the locations defined in the Contract Documents. The pre-remediation survey will serve as the baseline for the post-remediation survey. The pre-remediation survey shall be conducted by a Professional Engineer licensed in the State of New York and shall include, but not be limited to, visual inspection and photographic documentation of the existing conditions of the NYSEG electrical substation, Can-It Bottle Return Center Building, Galen Historic Society Museum, VFW Post 947 Building, and Clyde Lumber Yard Buildings. The structure/building inspections should document the condition of the structure/building foundation, basement/subsurface interior walls (if present), doors and windows (jams, casings, and glass), and other signs of potential distress of structural components, as indicated in Specification Section 02 21 19 – Structural Surveys. Note, all structural survey work performed within the electrical substation site security fence shall be performed in coordination with and under the supervision of NYSEG and will not require additional health and safety training.

The Professional Engineer that conducts the inspections shall prepare and submit a pre-remediation structural survey report to NYSEG and the Remediation Engineer prior to mobilization by the Remediation Contractor. The report shall include written text, photographs, and any relevant measurements or descriptions to document the pre-remediation conditions of the NYSEG electrical substation, Can-It Bottle Return Center Building, Galen Historic Society Museum, VFW Building, and Clyde Lumber Yard Buildings.

4.4 Remediation Contractor Pre-Mobilization Submittals

Following contract award, the selected Remediation Contractor will be required to prepare pre-mobilization submittals for review by NYSEG and the Remediation Engineer. The submittals shall, in turn, be provided by the Remediation Engineer to NYSDEC and/or NYSDOH prior to Remediation Contractor mobilization to the site. The Remediation Contractor will not be allowed to mobilize to the site prior to review and approval of all required pre-mobilization submittals. These submittals will include, but not necessarily be limited to, the following:

- **Insurance Certificate** – The Remediation Engineer will provide an insurance certificate identifying NYSEG as primary insured (certificate holder). Policy limits required for the remedial activities are identified in NYSEG's standard terms and conditions for environmental remediation work included in the Contract Documents. The Remediation Contractor shall not begin work prior to Remediation Engineer and NYSEG approval of the insurance certificate. The insurance policy shall be primary and non-contributory basis.
- **Project Operation Plan (POP)** – The POP is required to present the Remediation Contractor's detailed approach for implementing the pertinent work activities (incorporating, as necessary, plans, specifications, site maps, details, flow diagrams, charts, site geologic/geotechnical information, and schedules).
- **Health and Safety Plan (HASP)** – The Remediation Contractor shall prepare and submit a site-specific HASP (for use by onsite personnel during the remedial activities) to provide a mechanism for

establishing safe working conditions at the site. The HASP will be prepared in accordance with all applicable rules and regulations, including 29 Code of Federal Regulations (CFR) 1910 and 29 CFR 1926, and will be prepared and/or approved by a Certified Industrial Hygienist. The Remediation Contractor is required to take all necessary precautions for the health and safety of onsite personnel in compliance with all applicable provisions of federal, state, and local health/safety laws and the provisions associated with the HASP. The Remediation Contractor will assume sole responsibility for the accuracy and content of its HASP.

- **Preliminary Progress Schedule** – The Remediation Contractor will be required to prepare a preliminary schedule that identifies major work items and work sequences. This schedule will need to be periodically updated during the course of the remediation.

Additional requirements regarding the content of these Remediation Contractor pre-mobilization submittals and the overall submittal process are presented in the following Specification Sections:

- 01 15 00 – Remediation Contractor's Project Operations Plan
- 01 32 16 – Construction Progress Schedule
- 01 33 00 – Submittal Procedures
- 01 35 29 – Remediation Contractor's Health and Safety Plan

5 REMEDIATION ACTIVITIES

This section presents a task-by-task summary of the remedial activities to be conducted by the Remediation Contractor (except as identified otherwise herein), as follows:

- Work Task 1 – Project Meetings and Inspections
- Work Task 2 – Survey Control
- Work Task 3 – Mobilization
- Work Task 4 – Site Preparation
- Work Task 5 – Site Security, Control, and Access
- Work Task 6 – Construction Monitoring and Mitigation
- Work Task 7 – Monitoring Well Decommissioning
- Work Task 8 – Subsurface Utility Identification and Handling
- Work Task 9 – Excavation Support
- Work Task 10 – Soil Removal
- Work Task 11 – Excavation Dewatering and Water Management
- Work Task 12 – Material Handling, Re-Use, and Disposal
- Work Task 13 – Backfilling
- Work Task 14 – Site Restoration
- Work Task 15 – Project Close-Out

In addition to the text provided in the following subsections and the Design Drawings and Specifications included as Appendix A and B, respectively, remediation activities shall also be conducted in accordance with the following documents:

- CAMP (Appendix C) – describes the monitoring activities that will be conducted to monitor for potential airborne releases of COCs during remedial construction.
- CERP (Appendix D) – presents a summary of the site monitoring and work practices that will be completed to address potential short-term impacts to the surrounding community and/or environmental resources.
- Contingency Plan (Appendix E) – presents a summary of responses to potential emergencies that may arise during the remediation activities.
- Noise Monitoring Plan (Appendix F) – describes the noise monitoring activities to be implemented during the remediation activities.

The Remediation Contractor shall complete each remediation field task in accordance with the Remediation Contractor's HASP. The Remediation Contractor shall be responsible for conducting worker health and safety and worker breathing zone air monitoring for the Remediation Contractor's employees.

The Remediation Engineer will conduct community air monitoring for the duration of the project, in accordance with the CAMP and Specification Section 01 35 49 – Community Air Monitoring Plan.

A description of each remediation task, including references to supporting information included elsewhere in the Contract Documents, is presented in the following subsections.

5.1 Remediation Task 1 – Project Meetings and Inspections

Project meetings to be attended by the Remediation Contractor are described below. Additional details for the meetings are presented in Specification Sections 01 31 19.13 – Pre-Construction Conference and 01 31 19.23 – Progress Meetings. Anticipated onsite project meetings will consist of:

- Pre-Construction Meeting
- Daily Site Safety (Tailgate Safety) Meetings
- Weekly Construction Progress Meetings
- Pre-Final Inspection (Punch List)
- Final Inspection and Close-out Meeting

5.2 Remediation Task 2 – Survey Control

The Remediation Contractor shall retain a New York State licensed surveyor to conduct survey control during the remedial actions. The Remediation Contractor will supply the survey information (including an as-built survey, signed and sealed by the Remediation Contractor's New York State licensed surveyor) to the Remediation Engineer to document that the remedial activities have been completed consistent with the RD for inclusion in the FER (see Section 6). Survey work associated with the remedial activities will be performed in accordance with Specification Sections 01 71 23 – Field Engineering and 01 78 39 – Project Record Documents and includes but is not limited to the following:

- Pre-construction survey of the support areas and excavation area to be conducted prior to initiation of the remedial action.
- Interim survey(s) of the components such as, but not limited to, the post-removal bottom of the excavation area, to confirm, prior to backfill, the horizontal and vertical limits of removal have been met.
- Interim survey(s) of excavation area demarcation layer location and elevations if different than the excavation bottom (i.e., if excavated material is used as fill material).
- Post-construction survey of the restored areas, including the support areas and excavation area surveyed during the pre-construction survey. The post-construction survey will be conducted after completion of all site restoration activities to verify compliance with the RD prior to final demobilization.

Additionally, throughout performance of the work, geotechnical monitoring will be performed to assess and document movement of structures during construction, in accordance with Specification Section 31

09 13 – Geotechnical Instrumentation and Monitoring. The Remediation Contractor shall provide a final as-built survey within 21 days of final site demobilization and prior to final payment by NYSEG.

5.3 Remediation Task 3 – Mobilization

Site mobilization will be initiated by the Remediation Contractor after notification from NYSEG to proceed. In general, mobilization activities include bringing personnel, equipment, and materials to the site to support the remedial construction activities. Mobilization activities to be conducted by the Remediation Contractor include, but are not limited to, the following:

- Mobilizing necessary labor, equipment, materials, tools, and supervision to commence work on the project.
- Mobilizing and establishing two field office trailers: one to be utilized by the Remediation Contractor, and one to be utilized by the Remediation Engineer and the NYSDEC during implementation of the remedial activities. The trailers (and supporting telephone and internet services) shall conform to the requirements presented in Specification Section 01 52 13 – Field Offices and Sheds.
- Providing and maintaining portable sanitary services for use by onsite personnel engaged in the remedial activities. Portable sanitary facilities shall conform to the requirements presented in Specification Section 01 52 19 – Sanitary Facilities.
- Obtaining any additional permits not identified in Section 4. The Remediation Contractor shall be responsible for obtaining local permits (e.g., city building and/or construction permits) necessary to facilitate the remedial activities.

5.4 Remediation Task 4 – Site Preparation

During mobilization activities, the Remediation Contractor will also perform site preparation activities. The approximate locations of certain support facilities are shown on Design Drawing G-103. The Remediation Contractor will inspect and confirm the condition of installed facilities prior to the start of construction.

Site preparation activities will generally consist of the following:

- Contacting NYSEG for a service request to install temporary electrical service to provide power for onsite office trailers and site operations during remedial construction. The Remediation Contractor will be responsible for directly paying charges by NYSEG for all services related to installation and disconnection of the temporary service (e.g., meter rental, installation of the meter, overhead conductors, and any other electrical equipment required for the temporary service). The Remediation Contractor shall provide a qualified electrician/utility contractor to install utility pole(s), as needed and defined in communication with NYSEG as part of the service request, conductors from the top of the pole to the pole mounted meter box (to be provided by and installed by NYSEG) and to make electrical connections from the meter box to the office trailers and any additional electric subpanels (as needed) to support site operations (e.g., temporary onsite water treatment system [WTS]) during remedial construction. The Remediation Contractor shall also be responsible for local municipal permits to install and inspect the new service (if any).

- Installing temporary erosion and sedimentation controls in accordance with Design Drawing G-103 and Specification Sections 01 41 26 – Stormwater Pollution Prevention Plan and Permit and 01 57 00 – Temporary Controls. Temporary erosion and sedimentation controls include, but are not limited to, silt fencing, compost filter socks, and/or water diversion structures, as necessary.
- Excavating exploratory test pits (borings, trenches) by manual or vacuum methods within the proposed removal area to confirm the locations/routes, depths, construction materials, sizes, and status (active/inactive) for the utilities presented on Design Drawing G-102, as presented in Specification 01 71 33 – Protection of Work and Property.
- Identifying and marking the locations of overhead utilities as necessary to implement the remedial activities, as presented in Specification 01 71 33 – Protection of Work and Property. The Remediation Contractor will also be responsible for protecting certain overhead utilities as required to complete the remedial activities. The Remediation Contractor shall submit a service request to NYSEG's Electric Service Department to flag, mark, or sleeve the lines (to be performed by NYSEG at the Remediation Contractor's expense) to make them more visible to equipment operators and waste haulers.
- Installing a temporary fence around the perimeter of the proposed support areas for safety reasons to limit unauthorized access into the areas, as shown on Design Drawing G-103. The fence shall include a heavy-duty green or black privacy screen/mesh tarp to minimize, to the extent possible, view of the construction area by the public. The Remediation Contractor will be responsible for installing additional fencing and gates, as needed, to keep the work areas completely enclosed and secured at all times. Temporary fence shall be installed a minimum of 8 feet offset from the permanent electrical substation security fence or be electrically grounded by NYSEG personnel (at Remediation Contractor expense), as required by NYSEG. Requirements for barrier/visual markers are documented in Specification Section 01 14 13 – Site Security and Access.
- Providing, installing, and maintaining project signs and no trespassing signs along the perimeter of the support and work areas. Requirements for project signage are documented in Specification Section 01 58 13 – Temporary Project Signage.
- Installing temporary barriers and/or other visual markers (e.g., sawhorses, wooden stakes and flagging, orange traffic cones, orange construction fencing, plywood) to identify and protect seven groundwater monitoring wells, as shown on Design Drawing G-103. Requirements for barrier/visual markers are documented in Specification Section 01 71 33 – Protection of Work and Property. Monitoring wells MW-BH6, MW-8, MW-10, and MW-10B shall be temporarily protected until they are decommissioned by the Remediation Engineer (as described in Section 5.7) prior to excavation in the area or removed by the Remediation Contractor during excavation activities.
- Constructing access roads as shown on Design Drawing G-103.
- Determining and marking (i.e., using flagged wooden stakes, flagged metal pins, and/or spray paint, as appropriate) the horizontal limits of the proposed excavation area using global positioning system (GPS) or conventional survey equipment and techniques. Requirements for survey control are presented in Section 5.2 below and Specification Section 01 71 23 – Field Engineering.
- Contacting Dig Safely New York (Dig Safely) to initiate a subsurface utility clearance request, a minimum of 3 business days before the start of the remedial activities, to identify and mark the

locations of underground utilities (e.g., electricity, telecommunications) and associated structures at and near the work areas, as presented in Specification 01 71 33 – Protection of Work and Property. The Remediation Contractor will be responsible for: (1) confirming the locations of all subsurface utilities, including suspected abandoned utilities (e.g., using geophysical and/or other methods); (2) using spray paint and flagging (as appropriate) to mark the utility locations not already marked by Dig Safely; and (3) protecting all utilities throughout the remedial construction work, as shown on the Design Drawings.

- Performing general site preparation to support staging of office trailers and a temporary WTS, if necessary, and constructing foundation pads (e.g., for the WTS).
- Tree removal and grubbing activities in accordance with Specification Section 31 11 00 – Clearing and Grubbing.
- Installing structural monitoring points (e.g., seismographs, optical survey) at locations as required in Specification Section 31 09 13 – Geotechnical Instrumentation and Monitoring.
- Constructing temporary remediation support areas including, but not limited to: (1) waste material staging areas; (2) onsite storage areas (for clean materials); and (3) equipment, material, and personnel decontamination areas. The locations of the potential support area for material staging and decontamination areas are shown on Design Drawing G-103. Remediation support area construction requirements are shown on Drawing G-201 and detailed in Specification Sections 02 61 13 – Excavation and Handling of Contaminated Material, 02 51 00 – Decontamination, and 31 05 16 – Aggregates for Earthwork. The Remediation Contractor will be responsible for maintaining the remediation support areas (including the integrity of the liner systems) as necessary during implementation of the remedial activities.
- Constructing and testing the temporary WTS in accordance with Specification Section 01 53 53 – Temporary Water Treatment and Management. Additional details related to the temporary WTS are presented in Section 5.11. Note that if the Remediation Contractor utilizes offsite transportation and disposal for water generated onsite (i.e., onsite frac tanks for storage and offsite transportation and treatment/disposal), constructing and testing of the temporary WTS will not be required.

Refer to Design Drawing G-103 for additional information regarding site preparation.

5.5 Remediation Task 5 – Site Security, Control, and Access

Access to the site shall be restricted by installing perimeter fencing and gates (as shown on Design Drawing G-103). Additional measures shall be taken by the Remediation Contractor to further limit support and construction area access and security during the remedial activities, as described below. Security around excavation, staging, handling, decontamination, and storage areas shall be maintained during both work and non-work hours. The level of security shall be dependent on the activities being performed and location of activities. Security measures to be implemented include: (1) perimeter fencing; (2) temporary fencing and/or barriers; (3) warning tape and signs; (4) maintenance of sign-in/sign-out sheets; and (5) implementation of safe work practices. Temporary fence shall also be installed and relocated, as needed, during the remedial activities to limit access to the active work area. Site security, control, and access requirements are presented in Specification Section 01 14 13 – Site Security and

Access. Methods used by the Remediation Contractor shall be specified in the Remediation Contractor's Operations Plan.

The Remediation Contractor will be responsible for maintaining site security, controls, and access in connection with each work task. The work activities shall be coordinated with NYSEG to maintain uninterrupted safe access 24 hours per day, 7 days per week to the electrical substation for NYSEG personnel and emergency response vehicles. It is anticipated that NYSEG will double-lock the gates into and out of gated project areas using its own locks joined with locks to be provided by the Remediation Contractor (i.e., providing access to both NYSEG and the Remediation Contractor). The NYSEG project manager shall coordinate access for NYSEG personnel, only as needed, within the fenced work areas. Unauthorized access to fenced areas shall not be permitted by NYSEG. The Remediation Contractor will not have access to the electrical substation.

Onsite traffic shall be controlled during remedial activities. Prior to intrusive subsurface activities (e.g., manual/vacuum boring for utility identification), the Remediation Contractor shall implement onsite traffic control measures to maintain automobile traffic for NYSEG personnel to the electrical substation and preserve the safety of motorists and workers during performance of remedial activities. The Remediation Contractor shall minimize the disruption to NYSEG personnel accessing the electrical substation. Traffic control shall include detouring NYSEG personnel traffic in portions of the driveway to prevent unauthorized access to the project/construction limits.

5.6 Remediation Task 6 – Construction Monitoring and Mitigation

The Remediation Engineer and Remediation Contractor will share responsibilities for monitoring and impacts to workers, NYSEG personnel accessing the electrical substation, and the surrounding community throughout the remedial construction.

The Remediation Engineer will be responsible for implementing the following:

- Vapor and dust perimeter air monitoring.
- Noise monitoring.

The Remediation Contractor will be responsible for implementing the following:

- Worker breathing zone air monitoring (for the Remediation Contractor's employees).
- Geotechnical/Structural monitoring.

The Remediation Contractor will also be responsible for implementing corrective actions in consultation with the Remediation Engineer and NYSEG in the event of an exceedance. Monitoring requirements, action levels and corrective actions are detailed in attached specifications and plans as presented in the following subsections.

5.6.1 Vapor and Dust Perimeter Air Monitoring

Vapor and dust monitoring requirements action levels, appropriate corrective actions and reporting requirements are presented in Specification Sections 01 57 00 – Temporary Controls, 01 35 49 – Community Air Monitoring Plan, and the CAMP (Appendix C). The Remediation Engineer shall submit a

written CAMP report to NYSEG at the end of each work day that identifies daily work location, monitoring equipment locations, air monitoring results, any exceedances (comparison to action levels), and an odor monitoring log.

The Remediation Engineer shall submit a weekly CAMP report (via e-mail) to the NYSDEC, NYSDOH, and NYSEG. The weekly CAMP report shall include, but not be limited to, the following:

- A brief memorandum summarizing the air monitoring work activities and results for the monitoring period, including an in-text table that presents a “dashboard” view of the organic vapor and particulate concentrations measured at each station during the period. The memorandum shall be supported by two attachments: (1) Attachment 1 showing air monitoring station daily locations; and (2) Attachment 2 presenting graphs of the 15-minute time-weighted average (TWA) VOC and particulate concentrations recorded at each of the four sampling stations (one graph for each station showing the weekly results relative to action levels).
- A compressed data file that contains the raw data files from the individual monitors and meteorological data from the weather station (available upon request).
- A discussion of any exceedance of a perimeter air monitoring action level for total organic vapors or particulates for a 15-minute TWA, including the cause of the exceedance, and corrective measures implemented (or to be implemented) as a result of the exceedance.

In the event of an exceedance of an air monitoring action level for either total organic vapors or particulates, the Remediation Engineer will notify NYSEG and NYSDEC (via telephone) as soon as the exceedance is identified. The Remediation Engineer will send a follow-up e-mail to NYSDEC, NYSDOH, NYSEG, and the Remediation Contractor within 24 hours of an exceedance that summarizes the data, the cause of the exceedance, and corrective measures implemented (or to be implemented) in response to the exceedance. Work will not continue until exceedances are addressed in consultation with NYSEG and the Remediation Contractor. The Remediation Engineer will address exceedances in real time (i.e., immediately) in consultation with the Remediation Contractor.

Additional information regarding worker breathing zone monitoring shall be included in the Remediation Contractor's HASP in accordance with Specification Section 01 35 29 – Remediation Contractor's Health and Safety Plan.

5.6.2 Noise Monitoring

Noise monitoring requirements and corrective actions are presented in Specification Section 01 57 05 – Temporary Controls and the Noise Monitoring Plan (Appendix F).

5.6.3 Geotechnical Monitoring

The Remediation Contractor will be responsible for installing and monitoring excavation bracing and electrical substation geotechnical/structural instrumentation throughout the remedial construction in accordance with Specification Section 31 09 13 – Geotechnical Instrumentation and Monitoring. The Remediation Contractor shall provide a report to the Remediation Engineer and NYSEG at the end of each work day summarizing the geotechnical monitoring activities, including:

- Geotechnical monitoring measurements (compared to action levels) and exceedances (if any)
- Work activities performed
- Location of work

Work will not continue until exceedances are addressed in consultation with NYSEG and the Remediation Engineer. The Remediation Contractor shall conduct additional geotechnical monitoring (i.e., visual inspections) around the perimeter of the excavation area in accordance with Specification Section 31 09 13 – Geotechnical Instrumentation and Monitoring.

Corrective actions shall be performed by the Remediation Contractor, as needed, in response to readings and measurements taken as described in the Specification Section 31 09 13 – Geotechnical Instrumentation and Monitoring.

5.7 Work Task 7 – Monitoring Well Decommissioning

Three monitoring wells are located within the proposed excavation limits (monitoring wells MW-BH8, MW-10, and MW-10B, as shown on Design Drawing G-103). However, only bedrock monitoring well MW-10B and overburden monitoring well MW-10 (which has a sump constructed within the bedrock) will require formal decommissioning prior to intrusive activities. The Remediation Contractor will remove monitoring well MW-BH8, which is constructed entirely in the overburden, during the remedial activities.

The Remediation Engineer will decommission monitoring wells MW-10 and MW-10B in accordance with regulatory/policy requirements presented in the NYSDEC policy document titled, “CP-43: Groundwater Monitoring Well Decommissioning Policy,” dated November 2009 (CP-43). The wells shall be decommissioned via the grouting in-place and well casing/screen pulling method. The concrete surface pads shall be removed using pry bars, a jack-hammer, and/or other appropriate piece of equipment. The Remediation Engineer will observe the well decommissioning to verify that the work is conducted in accordance with the procedures identified in CP-43 and described below.

The bottom of the well shall be detached (using drill rods), and the well shall be tremie-grouted from the bottom up using a tremie pipe to approximately 1 foot above the top of bedrock. The grout shall be a standard mixture, in proportions of one 94-pound bag of Type I Portland cement, approximately 4 pounds of powdered bentonite, and approximately 8 gallons of potable water per batch, in accordance with the guidelines provided in Section 6.1 of CP-43. Immediately after the well is grouted, the PVC well casing and screen shall be removed by pulling or jacking using a device (e.g., drill rig, backhoe) with sufficient capacity. Additional grout shall be added, as needed as the casing/screen are removed, so that the final grout surface is approximately 1 foot above the bedrock surface. The remainder of wells MW-10 and MW-10B, consisting of a 4-inch diameter steel casing, will not be grouted because this portion of the well will be completely removed during subsequent excavation.

The materials generated by well decommissioning shall be transferred to the lined material staging area for offsite transportation and disposal with soil/debris generated during the remedial activities that is designated for disposal (i.e., separately from proposed reuse material).

Decontamination of the drilling equipment is required prior to commencing decommissioning work. All down-hole drilling equipment shall be decontaminated after the well decommissioning work is completed.

Washwater generated by the equipment decontamination shall be containerized in steel 55-gallon drums or the onsite frac tank.

Upon completing well decommissioning, the Remediation Engineer will complete Well Decommissioning Records as required by CP-43. A blank copy of the Well Decommissioning Record is included on Figure 3 in CP-43.

5.8 Remediation Task 8 – Subsurface Utility Identification and Handling

The Remediation Contractor will be required to protect subsurface utilities during the remedial activities. General utility protection plans are shown on Design Drawing G-102. The subsurface utilities within and around the work area will be protected as required in Specification Section 01 73 33 – Protection of Work and Property. NYSEG will coordinate overhead and underground utility (electric and telecommunications) relocation prior to initiation of the soil excavation remedial activities. Prior to intrusive subsurface activities (e.g. installing silt fencing, excavation), the Remediation Contractor shall identify, mark, and/or verify the location of aboveground and underground utilities, as described in Section 5.3.

The subsurface handling of utilities within and around the work area shall generally include:

- Coordinating with the utility owner to uncover the utility.
- Confirming that the lines are active or inactive.
- Uncovering, identifying the construction materials, surveying, protecting, and monitoring the utility as described in Section 5.3. Utilities shall also be uncovered within 5 feet of the excavation limits. Potholes to identify the electric grounding grid adjacent to the excavation shall be left uncovered and protected//demarcated for potential NYSEG inspection/monitoring.
- Surveying the locations and elevations of existing and new utilities.
- Dewatering excavations, as necessary, and treating the groundwater.

The Remediation Contractor shall conduct utility relocation activities such that utility outage durations are minimized.

5.9 Remediation Task 9 – Excavation Support

An excavation support system will be installed along the perimeter of the proposed excavation area to prevent undermining and movement of the surrounding soils and above grade features, due to the anticipated depth of excavation in the vicinity of the active electrical substation and the northern property boundary. The excavation support system will further maximize excavation of impacted soil without encroaching on the electrical substation and adjacent properties. Additionally, the subsurface excavation system will be installed to eliminate the need for extensive sloping and to minimize the intrusion of groundwater into the excavation. The excavation support system shall consist of a hydraulic barrier wall for seepage control, rock-socketed soldier piles, and steel or timber lagging. The design will adhere to Title 29 CFR Part 1926 Occupational Safety and Health Standards - Excavations. Further details on the

installation of the excavation support system will also be provided by the Remediation Contractor in the form of shop drawing submittals.

The Remediation Contractor will be responsible for providing, installing, monitoring, and maintaining the excavation support system to facilitate the excavation of materials from the removal area shown on Design Drawing C-102. The excavation support system shall be installed in accordance with Specification Section 31 50 00 – Excavation Support and Protection.

5.10 Remediation Task 10 – Soil Removal

Materials to be excavated by the Remediation Contractor as part of the remedial activities include:

- Surface soil
- Gravel/stone surface cover
- Subsurface soil within the excavation area from approximately 1 to 20 feet bgs

The proposed horizontal and vertical limits of excavation are shown on Design Drawing C-101. Cross sections identifying subsurface geology in the excavation area are provided on Design Drawing C-201. Excavation shall be performed in accordance with Specification Section 31 23 00 – Excavation and Fill. Excavation operations are described in the subtasks below.

5.10.1 Soil Removal Quantities

The horizontal and vertical limits of the soil excavations are shown on Design Drawing C-102. A summary of the excavation activities is presented in Table 5.1 below.

Table 5.1. Summary of Material Excavation

| Material | Anticipated Depth (feet bgs) | Area (square feet) | Estimated Volume (CY) | Disposition |
|--------------------------|------------------------------|--------------------|-----------------------|---|
| Gravel/Stone | 1 | 7,350 | 285 | Staged for potential re-use |
| Surface Soil | 1 | 6,300 | 235 | |
| Impacted Subsurface Soil | 14 to 19.5 (varies) | 8,750 | 4,140 | Transported offsite for landfill disposal |
| | | | 460 | Transported offsite for LTTD treatment |

The proposed excavation elevations depicted on the Design Drawings are based on the anticipated top of weathered bedrock elevation. Final excavation elevations may vary based on the observed top of weathered bedrock during construction. The Remediation Contractor shall not excavate beyond the depths shown on the Design Drawings without Remediation Engineer approval. Prior to backfilling, Remediation Contractor must obtain approval from the Remediation Engineer that the excavation limits and depths are acceptable.

5.10.2 Excavation Methods/Sequence

The Remediation Contractor shall conduct excavation and backfilling activities in a manner that minimizes the disruption to onsite operations. The Remediation Contractor shall coordinate with NYSEG to

coordinate the excavation and backfilling activities and maintain access at all times to the electrical substation for NYSEG personnel performing emergency or routine activities.

The Remediation Contractor shall excavate subsurface soil within the excavation areas to the approximate elevations shown on the Design Drawings.

The Remediation Contractor shall not proceed with excavation beyond the proposed limits and elevations shown on the Design Drawings without Remediation Engineer and NYSEG approval. Equipment used to excavate and handle soil shall not be moved from the Exclusion Zone(s) without first being decontaminated, as described in Section 5.15.

The Remediation Contractor is responsible for sequencing work accordingly while awaiting receipt of analytical results for re-use samples, if appropriate and required, as described in Section 5.12.1. The Remediation Contractor shall assume that analytical results will be provided no later than five full business days after receipt of a given sample at the contract laboratory, and NYSEG/Remediation Engineer shall provide approval/disapproval to use re-use material as backfill (in consultation with the NYSDEC).

The excavation volumes shall be based on the in-situ volumes as determined based on pre- and post-excavation survey as performed by the Remediation Contractor's Professional Land Surveyor licensed in the State of New York. Handling of the soil identified above (e.g., loading, offsite transportation/disposal, and onsite transfer) is further described in Section 5.12.

5.10.3 Subsurface Obstruction/Structure Removal

Several former MGP-related structures are located within the excavation area and will be removed as part of the remedial construction activities. Based on historical drawings and the results of site investigation activities, foundations of the MGP Building (generators, retorts, and purifiers) and a gas holder remain at depths of approximately 6 and 8 feet bgs, respectively. The MGP foundations are generally constructed of bricks, concrete, and field stone and the gas holder foundation is constructed of brick approximately 2 feet thick. Coal tar and NAPL saturated soil were identified within the limits of the foundations, however, free-phase NAPL was not observed.

The subsurface foundations located within the limits of the excavation area (as shown on Design Drawing C-101) will be removed, in accordance with the ROD. The foundation removal activities will be performed within the limits of excavation sidewall support installed for the removal area, as indicated on Design Drawing C-101, to facilitate removal of subsurface soil beneath the foundations. It is assumed that the foundations will be demolished and removed as the excavation activities progress from ground surface to target depth. Demolition debris will be segregated, heavily impacted material removed, and downsized as necessary for offsite transportation and disposal/recycling purposes.

5.10.4 Excavation Bracing Demolition and Removal

A portion of the excavation bracing and hydraulic barrier wall will be demolished as part of the remedial construction activities to restore hydraulic flow to the excavation area. The northern and southern alignments of the excavation bracing and two locations along the western and eastern alignment of the excavation bracing will be demolished. Following removal of steel lagging, demolition will include break-up and removal of the hydraulic barrier to approximately 10 feet bgs, as shown on Design Drawing C-103.

Each soldier pile shall be cut at approximately 3 feet bgs and removed from the excavation. Excavated materials will be handled as described in Section 5.12. Demolition will be sequenced and performed as to maintain the integrity of the excavation bracing (e.g., demolition will be performed following backfilling the excavation area to 10 feet bgs).

5.11 Remediation Task 11 – Excavation Dewatering and Water Management

The Remediation Contractor will be responsible for the setup and operation of the temporary WTS and achieving the discharge criteria specified in the permit. The Design Engineer will be responsible for obtaining the discharge permit with the WWTP and conducting sampling required under the permit, as well as any system performance sampling.

The Remediation Contractor will provide, mobilize, install, operate, and maintain a temporary onsite WTS to manage water generated during the construction activities. This may include, but is not limited to, the following:

- Groundwater and perched water from the excavation.
- Precipitation and surface-water runoff that enter the excavation.
- Water generated by gravity dewatering of excavated soil.
- Water generated by decontamination of equipment, trucks, and personnel.

The groundwater depth is shown on the cross-sections in Design Drawing C-201. Approval will be sought to discharge water treated at the WTS to the Clyde WWTP.

Water from the excavation will be pumped to two 18,000-gallon/weir tanks plumbed in parallel to allow initial settling of gross suspended solids. The water from the weir tanks will be pumped through two parallel trains of two bag filter housings for further removal of suspended solids. The bag filter sizes are anticipated to be 25-micron bag filters in the first set of housings, followed by 10-micron bag filters in the second set of housings. From the bag filters, water will flow through a zeolite resin vessel for removal of residual NAPL and/or metals, followed by two granular activated carbon (GAC) vessels in series for removal of organics. The treated water from the GAC vessels will flow into either of two 20,000-gallon effluent tanks where the water can be discharged, used for back wash, or retreated. Requirements for temporary WTS components are provided in Specification Section 01 53 53 – Temporary Water Treatment and Management.

The temporary water management system will be installed at a location that will not interfere with excavation operations and provides suitable discharge to a sanitary sewer or truck access to support offsite haulage, if necessary.

5.12 Remediation Task 12 – Material Handling, Re-Use, and Disposal

Material shall be handled, re-used (where appropriate), and/or disposed offsite in a manner that minimizes the potential for inadvertent releases to the environment, unsafe conditions for site personnel, and delays or complications in project implementation.

5.12.1 Material Description

Pre-excavation in-situ soil waste characterization sampling was performed as part of the PDI (refer to Section 2.1.3) to support the direct-loading of impacted excavated materials destined for offsite disposal and pre-approval of soil for disposal at appropriate offsite facilities. Removed soil will be visually characterized onsite to determine final offsite treatment/disposal requirements. Excavated material is anticipated to include gravel/stone, subbase material, construction and demolition (C&D) debris (brick, concrete, field stone), surface soil, non-impacted subsurface soil, and impacted subsurface soil. Potential material that may be re-used as subsurface backfill includes gravel/stone, subbase material, and surface soil. Subsurface soil is anticipated to be transported for offsite disposal/treatment, however, subsurface soil that does not exhibit visible MGP-impacts (i.e., NAPL, blebs, stringers, sheens) and contains PAHs at concentrations less than the commercial-use and protection or groundwater SCOs may potentially be re-used as backfill. Material pre-characterized as non-hazardous but containing NAPL (if any) shall be transported offsite for thermal treatment. C&D debris may not be re-used as backfill. Cross-sections identifying the approximate excavation depths are included on Design Drawing C-201.

If excavated material is identified for potential re-use, the Remediation Engineer shall visually evaluate and sample the material prior to re-use as subsurface fill beneath a minimum of 1-foot of soil cover meeting commercial-use SCOs. The Remediation Engineer shall collect samples of the potential additional re-use material in general accordance with the protocols outlined in Section 5.4(e)4 of DER-10 for analysis of SVOCs. The number of samples will be a function of the volume of re-use material to be used as outlined in Section 5.4(e)10 of DER-10. The Remediation Contractor shall assume that analytical results of re-use material will be provided, and approval/disapproval to use re-use material as backfill (in consultation with the NYSDEC), no later than five full business days after receipt of a given sample by the contract laboratory. The Remediation Contractor is responsible for sequencing work accordingly while awaiting receipt of analytical results.

Other subsurface debris removed from the excavation areas, such as steel/iron pipes and conduits, shall be stockpiled separately and transported for offsite reclamation. Requirements for material handling are presented in Specification Sections 01 74 19 – Construction Waste Management and Disposal and 02 61 13 – Removal and Disposal of Contaminated Material.

Water generated from the excavation area and equipment and personnel decontamination activities will be handled as presented in Section 5.11.

5.12.2 Loading

The Remediation Contractor shall direct-load excavated materials to the extent possible to minimize the size of the staging area(s) and to minimize double-handling of the materials. Excavated material that requires dewatering to remove free liquids or further characterization shall be stockpiled in a lined material staging area or within the actual excavation pit prior to offsite transportation and treatment/disposal.

5.12.3 Transportation and Treatment / Disposal

Transportation for non-hazardous material shall be arranged by the Remediation Contractor. The Remediation Contractor will be responsible for placarding of waste containers/trucks, and for

transportation to the designated facility by a licensed hauler in accordance with applicable local, state, and federal regulations. Each waste transporter shall have a valid waste transporter permit (6 NYCRR Part 364). All trucks dispatched to the site must be on a pre-approved list and verified by the Remediation Engineer prior to loading. Wastes shall be transported under a hazardous waste manifest, a conditionally-exempt MGP remediation manifest, or non-hazardous waste manifest, or bill-of-lading, as appropriate. The Remediation Engineer will be responsible for preparing waste profiles for review and signature by NYSEG or its agent. The Remediation Contractor will be responsible for obtaining blank manifests/bills of lading from the designated disposal/treatment facility and providing them to the Remediation Engineer to complete and sign on behalf of NYSEG (under agreement with NYSEG). The manifests/bills-of-lading shall list NYSEG as the waste generator, and copies of completed manifests/bills-of-lading shall be maintained onsite in the project office trailer. Completed copies of the manifests (facility confirmation of receipt and disposal) as well as weight tickets shall be provided to NYSEG by the Remediation Contractor as part of the project close out submittals. The Remediation Contractor is required to maintain a running summary of offsite waste shipments for each waste stream including sequential load number, manifest number, date of shipment, facility ticket number, and facility weight. This information shall be required for each weekly construction meeting. Requirements for transportation and disposal are presented in Specification Sections 01 74 19 – Construction Waste Management and Disposal and 02 61 13 – Excavation and Handling of Contaminated Material.

Potential facilities for offsite disposal of non-hazardous soil generated by the remedial activities include: (1) Seneca Meadows Landfill located in Waterloo, New York; and (2) Ontario County Landfill located in Stanley, New York.

In the event that a portion of the excavated material is heavily-impacted with NAPL and cannot be disposed at the above identified landfills, the Remediation Contractor will coordinate transportation and disposal of those materials with ESMI.

5.13 Remediation Task 13 – Backfilling

Backfill excavation areas in accordance with Specification Section 31 23 00 – Excavation and Fill. Prior to performing backfilling activities, the Remediation Contractor shall amend backfill with an oxygen releasing compound, as described in Section 5.13.1 below. The Remediation Contractor may be permitted to begin backfilling a portion of an excavation area where the target removal depth has been reached and final grade is achieved, while continuing to excavate impacted soil from another section of the excavation area. The Remediation Contractor is responsible for sequencing work accordingly while awaiting receipt of analytical results.

The Remediation Contractor shall install a permeable non-woven geotextile or orange construction fencing (demarcation layer) at the interface of imported “clean fill” (to be sampled and analyzed at the Remediation Contractor’s expense) meeting 6 NYCRR Part 375 commercial-use SCOs and: (1) native soils at the bottom of the excavation; or (2) excavated material that meets re-use criteria and have been placed as backfill material. Requirements for the demarcation layer and installation are presented in Specification Section 31 05 19.13 – Geotextiles for Earthwork.

The Remediation Contractor shall arrange for compaction testing of the fill materials by an independent testing laboratory in accordance with Specification Section 31 23 00 – Excavation and Fill. The

Remediation Contractor shall achieve specified compaction levels regardless of the backfill material source (including excavated soils from the site that meets site re-use criteria).

Utilize fill materials as specified on the Design Drawings and in Specification Section 31 05 16 – Aggregates for Earthwork.

5.13.1 Oxygen Releasing Compound

The Remediation Contractor will add a groundwater amendment to backfill materials within the saturated zone. Based on a review of commercially available groundwater amendments and previous experience, IXPOR 75C (or Design Engineer-approved equal) has been selected as the groundwater amendment for the site based on the product's longevity (i.e., ability to serve as a source of oxygen over a longer period of time [4 to 9 months]), amount of oxygen available (i.e., approximately 17% by weight), and cost-effectiveness. Product information is included on the attached DVD. Proposed backfill amendment application rate of 5% by weight, based on previous experience. The Remediation Contractor shall amend backfill placed below the water from the excavation bottom to 5 feet below proposed final grade with a slow-release oxygen compound. Backfill from proposed final grade to 5 feet below final grade will not be amended with oxygen releasing compound to minimize the impacts to biota within the habitable zone (e.g., increase in pH due to the amendment).

Based on the anticipated volume and weight of the materials subject to excavation, approximately 260 tons of IXPOR 75C (as manufactured by Carus Group, Inc.), will be uniformly amended into the backfill materials within the excavation via excavator bucket mixing. The Remediation Contractor shall obtain NYSEG and Remediation Engineer approval prior to the use of an alternative backfill amendment.

5.14 Remediation Task 14 – Site Restoration

The Remediation Contractor will restore disturbed areas following the completion of excavation and backfilling. Following backfilling of the excavation area, the Remediation Contractor will:

- Restore in-kind all support and ancillary areas disturbed during remedial activities.
- Restore all features disturbed, damaged, or destroyed during the remedial activities to pre-construction condition.
- Repair/replace damaged gravel/stone driveways in-kind, in accordance with the requirements set forth in the Design Drawings.
- Restore disturbed vegetated surfaces in accordance with the requirements set forth in Specification Section 32 90 00 – Planting.

5.15 Remediation Task 15 – Project Close-Out

The Remediation Contractor will perform project close-out activities, including decontamination, post-remediation structural survey, and demobilization as described below.

5.15.1 Decontamination

The Remediation Contractor shall decontaminate (as necessary) all personnel and equipment, and vehicles that contact excavated materials. All construction vehicles leaving the site (including vehicles that had been transporting clean fill) shall be cleaned and/or decontaminated by the Remediation Contractor (as necessary) to prevent the tracking of soil offsite. The Remediation Contractor shall conduct decontamination activities within the decontamination area at the location shown on Design Drawing G-103.

At a minimum, the Remediation Contractor shall decontaminate the Remediation Contractor's project equipment that contacts excavated soil (including, but not limited to, excavation equipment, soil mixing equipment, trucks, pumps, and hand tools) prior to demobilizing and prior to handling clean material in accordance with Specification Section 02 51 00 – Decontamination. In addition, equipment used to handle excavated material or liquids shall be decontaminated prior to further handling of non-impacted material. The Remediation Contractor shall perform decontamination activities until no visible soil, debris, or stains are present on the equipment surfaces (to the satisfaction of NYSEG and/or the Remediation Engineer). Equipment, such as pumps, shall be flushed using clean water and appropriate cleaning agents (as necessary) to the satisfaction of NYSEG and/or the Remediation Engineer.

Unless otherwise directed by NYSEG and/or the Remediation Engineer, clean any equipment to be taken offsite within the constructed decontamination area. All decontaminated equipment will be subject to a final visual inspection by NYSEG and/or the Remediation Engineer. Handle water generated during decontamination activities as described in Section 5.11.

Manage the solid and liquid waste streams generated by the decontamination activities for offsite disposal in accordance with Specification Sections 01 74 19 – Construction Waste Management and Disposal and 02 61 13 – Excavation and Handling of Contaminated Material. The Remediation Contractor is responsible for contracting transportation and disposal of all project related waste streams with the exception of waste materials destined for ESMI.

5.15.2 Post-Remediation Structural Survey

The post-remediation structural survey shall be conducted by the same third-party engineering firm that conducted the pre-remediation structural survey. The post-remediation structural survey will be conducted consistent with the pre-remediation structural survey and include, but not be limited to, visual inspection and photographic documentation of the NYSEG electrical substation, Can-It Bottle Return Center Building, Galen Historic Society Museum, VFW Building, and Clyde Lumber Yard Buildings, in accordance with Specification Section 02 21 19 – Structural Surveys. A post-remediation structural survey report shall be submitted to NYSEG, the Design Engineer and the Remediation Engineer within two weeks following the inspection. Note that any damage to existing structures (caused by negligent activities by the Remediation Contractor), shall be repaired by the Remediation Contractor, at no additional cost to NYSEG.

5.15.3 Demobilization

Following completion of all remedial activities, the Remediation Contractor will conduct the following demobilization activities in accordance with Specification Sections 01 74 13 – Progress Cleaning, 01 77 19 – Closeout Procedures, and 01 78 39 – Project Record Documents:

- Complete “punch-list” items, to be identified by the Remediation Engineer and NYSEG.
- Dismantle the work area(s), support/staging area(s), and decontamination area(s).
- Remove specified erosion and sediment control measures, as presented under Section 5.4, when the remedial activities are completed, and vegetation is established with a minimum 80 percent density.
- Transport residual wastes (e.g., disposable equipment; personal protective equipment [PPE]; sampling equipment; cleaning residuals; sacrificial soil and liners from the material staging, and equipment decontamination areas) remaining at the completion of the remedial activities for offsite disposal in accordance with applicable rules and regulations.
- Remove/dispose of project-related material, equipment, and support structures from the site, as appropriate.
- Prepare and provide required final field records and submittals to the Remediation Engineer.

6 POST-REMEDATION ACTIVITIES

Activities to be conducted following the completion of remedial construction activities at the site include the following:

- Preparing an SMP
- Establishing institutional controls in the form of an environmental easement
- Preparing a FER
- Performing post-remedial action monitoring

A description of the SMP, institutional controls, and FER are presented below, along with an outline of the proposed long-term monitoring program.

6.1 Site Management Plan

Following completion of the remedial construction activities and consistent with the requirements of DER-10 (NYSDEC, 2010b), the Remediation Engineer shall prepare an SMP that will detail the post-remedial action activities to be conducted at the site. In general, the SMP will provide the methods and protocols to be followed when conducting post-remediation monitoring (described in Section 6.4) and potential future intrusive site activities.

The SMP will be prepared to include the following information:

- Description of the site and identification of areas covered by the SMP.
- An Excavation Plan which provides the requirements for management of future excavations in areas of remaining contamination.
- Identification of any use restrictions on the site.
- Descriptions of site inspection, maintenance, and notification and reporting requirements
- Monitoring requirements for the site cover and groundwater.
- Evaluation of the potential for vapor intrusion for any future buildings developed on the site, including provision for mitigation of any impacts identified (as appropriate).

The format and content of the SMP document will be consistent with the guidelines provided in the NYSDEC's SMP template. The SMP will be incorporated as an attachment of the FER.

6.2 Institutional Controls

As required by the ROD, institutional controls in the form of an environmental easement will be established for the site. The Remediation Engineer shall assist NYSEG to establish the environmental easement in support of the following:

- Restricting the use of the site to commercial use, which would also permit industrial use.

- Requiring management of the site in accordance with the provisions of the NYSDEC-approved SMP (as described in Section 6.1).
- Restricting the use of groundwater at the site.
- Requiring NYSEG (or the property owner) to complete and submit periodic certifications to NYSDEC that the institutional and engineering controls are still in place and remain effective.

NYSEG will initiate the establishment of the environmental easement following the completion of the remedial activities. The environmental easement will be incorporated as an attachment of the SMP.

6.3 Final Engineering Report

The Remediation Engineer shall prepare and submit a FER to the NYSDEC, following the completion of remedial construction activities. In accordance with DER-10 (NYSDEC, 2010b) the FER will present, at a minimum, the following information:

- Description of the remediation activities completed in accordance with the approved RD, including problems encountered and variations (if any) from the NYSDEC-approved Final RD Report.
- Record (“as-built”) drawings, tables, and figures detailing the remedial activities completed and indicating that acceptance criteria were met.
- Information and documentation regarding the final quantities and disposition of materials disposed/treated offsite during implementation of the remedial activities, including executed manifests and bills of lading.
- Summaries of field observations, test performed, laboratory samples collected, and monitoring results obtained during construction (e.g., CAMP monitoring).
- Summaries of problems and deficiencies encountered during construction, including recurring problems and/or deficiencies discovered.
- Representative photographs taken during implementation of the remedial activities.
- Copies of the regulatory permit(s) and other key regulatory agency correspondence related to the permits and permit compliance.
- Certification statement.

The FER will document the remedial activities performed at the site. The FER will be prepared in a format based on available templates on the NYSDEC website. A professional engineer licensed in New York State will sign and seal the FER, including the record drawings and certification statement.

6.4 Post-Remedial Action Monitoring

Following the completion of the remedial construction activities, periodic monitoring will be conducted to evaluate/monitor:

- The soil cover system
- Site groundwater.

Following the completion of the remedial construction activities, annual site inspections will be performed to evaluate the soil cover system. Additionally, groundwater monitoring will be conducted periodically to document post-remediation groundwater conditions.

The scope, frequency, and duration requirements for post-remediation site inspection and groundwater monitoring will be provided in the SMP.

7 SCHEDULE

This section presents the preliminary project schedule for NYSDEC review of the RD documents. The proposed preliminary project schedule is presented in Table 7.1 below.

Table 7.1. Preliminary Project Schedule

| Schedule Component | Milestone Completion Date |
|---|---------------------------|
| Final RD to NYSDEC | May 2019 |
| NYSDEC Approval of Final RD | June 2019 |
| Remediation Contractor Bidding and Procurement | July 2019 |
| Remediation Contractor and Remediation Engineer Preparation of Plans and Submittals | March 2020 |
| Remediation Contractor Mobilization | October 2020 |

Initiation of construction is contingent on meeting the initial schedule components defined above and receipt of all required permits, access agreements, and approvals. Further details regarding the schedule for the remedial construction and sequencing of the work will be presented in a construction schedule to be submitted to the NYSDEC once the permits for the project have been received and the Remediation Contractor and Remediation Engineer have been selected. The work will be sequenced based on the selected Remediation Contractor's approach, and in consideration of weather/climatic conditions and any permit requirements (e.g., construction window) or other regulatory conditions.

8 REFERENCES

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TABLES



Table 1
PDI Analytical Sample Summary

New York State Electric & Gas Corporation
Clyde Former MGP Site
Geneva, New York
Remedial Design

| Sample ID | Depth | Date Analyzed | Analytical Parameter | | | | | | | | | | | | | | | | | | |
|---------------|-----------|---------------|----------------------|----------|-----------|------------|-------------------------|-------------------------------|---------------|------------|------------|------------------|--------------|-------------|------------------------------|-----------------|----------|---------------|-------------------------------------|----------------------------------|--|
| | | | PCBs | TCL VOCs | TCL SVOCs | Inorganics | Geotechnical Parameters | Uniaxial Compressive Strength | Total Cyanide | Pesticides | Herbicides | TCL P Parameters | Ignitability | Corrosivity | Reactive Sulfide and Cyanide | TPH GRO and DRO | % Sulfur | Heating Value | Groundwater Treatability Parameters | Free Liquids (paint filter test) | |
| Soil | | | | | | | | | | | | | | | | | | | | | |
| GTSB-1/GTSB-2 | 5-15 | 12/5/2017 | X | X | X | X | | | X | X | | | X | | | | | | | X | |
| GTSB-1/GTSB-4 | 0-7 | 11/19/2017 | X | X | X | X | | | X | X | X | X | X | X | | | | | | X | |
| GTSB-1 | 0-5 | 12/1/2017 | | | | | X | | | | | | | | | | | | | | |
| | 24.5-25 | 12/4/2017 | | | | | X | X | | | | | | | | | | | | | |
| GTSB-2 | 9-11 | 12/4/2017 | | | | | X | | | | | | | | | | | | | | |
| | 5-15 | 12/4/2017 | X | X | X | X | | | X | | | | | | | X | X | X | | | |
| | 28-29 | 12/4/2017 | | | | | | X | | | | | | | | | | | | | |
| | 0-5 | 12/1/2017 | | | | | X | | | | | | | | | | | | | | |
| GTSB-3 | 0-9 | 12/5/2017 | X | X | X | X | | | X | | | | | | | X | X | X | | | |
| | 9-25 | 12/4/2017 | X | X | X | X | | | X | | | | | | | X | X | X | | | |
| | 29.5-30 | 12/1/2017 | | | | | | X | | | | | | | | | | | | | |
| | 32-32.5 | 12/1/2017 | | | | | | X | | | | | | | | | | | | | |
| GTSB-4 | 5-11 | 12/5/2017 | X | X | X | X | | | X | | | | | | | X | X | X | | | |
| | 11-13 | 12/5/2017 | | | | | X | | | | | | | | | | | | | | |
| | 11-17 | 12/5/2017 | X | X | X | X | | | X | | | | | | | X | X | X | | | |
| | 25.1-25.6 | 12/5/2017 | | | | | | X | | | | | | | | | | | | | |
| SB-24 | 5-17 | 11/29/2017 | X | X | X | X | | | X | | | | | | | X | X | X | | | |
| SB-24/SB-25 | 0-5 | 11/29/2017 | X | X | X | X | | | | X | X | X | X | X | X | | | | | X | |
| | 13-25 | 11/29/2017 | X | X | X | X | | | | X | X | | | X | | | | | | X | |
| SB-25 | 5-13 | 11/29/2017 | X | X | X | X | | | X | | | | | | | | X | X | X | | |
| SB-26 | 5-21 | 11/30/2017 | X | X | X | X | | | X | | | | | | | | X | X | X | | |
| | 21-25 | 12/4/2017 | X | X | X | X | | | X | | | | | | | | X | X | X | | |
| SB-26/SB-27 | 0-5 | 11/29/2017 | X | X | X | X | | | | X | X | | | X | | | | | | X | |
| SB-27 | 5-9 | 11/30/2017 | X | X | X | X | | | X | | | | | | | | X | X | X | | |
| | 9-15 | 12/4/2017 | X | X | X | X | | | X | | | | | | | | X | X | X | | |
| Groundwater | | | | | | | | | | | | | | | | | | | | | |
| MW-10 | -- | 12/14/2017 | | X | X | | | | | X | | | | | | | | | X | | |
| MW-10B | -- | 12/14/2017 | | X | X | | | | | X | | | | | | | | | X | | |

Notes:

- Samples were collected by Arcadis.
- TCLP Parameters = volatile organic compounds (VOCs), semi-volatile organic compounds (SVOCs), metals, pesticides, and herbicides.
- Groundwater treatability parameters includes BOD, hardness, nitrogen (ammonia), total suspended solids, and hexane extractable material (HEM) oil and grease.
- Geotechnical parameters include water content, United Soil Classification System classification, and Atterberg limits.
- Laboratory analysis was performed by SGS laboratory of Dayton, New Jersey for one or more of the analyses listed below:
 - Polychlorinated biphenyls (PCBs) using United States Environmental Protection Agency (USEPA) SW-846 Method 8082A.
 - Target compound list (TCL) volatile organic compounds (VOCs) using USEPA SW-846 Method 8260C.
 - TCL semi-volatile organic compounds (SVOCs) using USEPA SW-846 Method 8270D.
 - Target analyte list (TAL) metals using USEPA SW-846 Methods 6010C and 7471B.
 - Total cyanide using USEPA SW-846 Method 9012B or 335.4.
 - Pesticides using USEPA SW-846 Method 8081B.
 - Toxic Characteristic Leaching Procedure (TCLP) extraction by United States Environmental Protection Agency (USEPA) SW-846 Method 1311 and analysis by:
 - VOCs using USEPA SW-846 Method 8260C.
 - SVOCs using USEPA SW-846 Method 8270D.
 - Metals using USEPA SW-846 Methods 6010C and 7471A.
 - Pesticides using USEPA SW-846 Method 8081B.
 - Herbicides using USEPA SW-846 Method 8151A.
 - Ignitability using USEPA SW-846 Method 1010A/ASTM D93.
 - Corrosivity as pH using USEPA SW-846 Method 9045D.
 - Reactive sulfide and cyanide using USEPA SW-846 Chapter 7 Methods.
 - Total petroleum hydrocarbons (TPH) gasoline range organics (GRO) and diesel range organics (DRO) using USEPA SW-846 Method 8015C.
 - % sulfur using American Society for Testing and Materials (ASTM) method D129-95.
 - Heating value using ASTM method D240-92.
 - Biological oxygen demand (BOD) using Standard Method (SM) 5210B-11.
 - Oil/Grease using USEPA 1664B.
 - Corrosivity as pH using SM 9045D.
 - Nitrogen, ammonia using SM 4500NH3H-11.
 - Total suspended solids (TSS) using SM 2540D-11.
 - Hardness using SM2340C-11.
 - Free liquid using USEPA SW-846 Method 9095B.
- An X indicates analysis was conducted.
- = A depth is not applicable for the sample.

Table 2
PDI Geotechnical Results

New York State Electric & Gas Corporation
Clyde Former MGP Site
Geneva, New York
Remedial Design

| Location ID: | Units | GTSB-1 | | GTSB-2 | | GTSB-3 | | | GTSB-4 | |
|-------------------------------|-------|-----------------------------|-----------|-----------------|-----------|--------------------------------|-----------|-----------|---------------------|-----------|
| Sample Depth(feet): | | 0-5 | 24.5-25 | 9-11 | 28-29 | 0-5 | 29.5-30 | 32-32.5 | 11-13 | 25.1-25.6 |
| Date Collected: | | 12/1/2017 | 12/4/2017 | 12/4/2017 | 12/4/2017 | 12/1/2017 | 12/1/2017 | 12/1/2017 | 12/5/2017 | 12/5/2017 |
| Sample Type: | | Overburden | Bedrock | Overburden | Bedrock | Overburden | Bedrock | | Overburden | Bedrock |
| Water Content | % | 24.3 | -- | 30.1 | -- | 6.0 | -- | -- | 21.8 | -- |
| USCS Symbol | -- | CL | -- | CL | -- | GC-GM | -- | -- | CL | -- |
| USCS Classification | -- | Sandy lean clay with gravel | -- | Sandy lean clay | -- | Silty, clayey gravel with sand | -- | -- | Lean clay with sand | -- |
| Atterberg Limits | | | | | | | | | | |
| Liquid Limit | % | 41 | -- | 38 | -- | 24 | -- | -- | 30 | -- |
| Plastic Limit | % | 23 | -- | 22 | -- | 20 | -- | -- | 15 | -- |
| Plasticity Index | % | 18 | -- | 16 | -- | 4 | -- | -- | 15 | -- |
| Uniaxial Compressive Strength | psi | -- | 3,070 | -- | 2,010 | -- | 2,100 | 2,380 | -- | 2,700 |

Notes:

1. Samples were collected by Arcadis on the dates indicated.
2. psi = pounds per square inch.
3. USCS = Unified Soil Classification System.
4. CL = Inorganic clays of low to medium plasticity, gravelly clays, sandy clays, silty clays, lean clays.
5. GC = Clayey gravels, gravel-sand-clay mixtures.
6. GM = Silty gravels, gravel-sand-silt mixtures.

Table 3
PDI Soil Waste Characterization Analytical Results

New York State Electric & Gas Corporation
Clyde Former MGP Site
Clyde, New York
Remedial Design

| Location ID: Sample Depth(foot): Date Collected: | 6 NYCRR Part 371 (TCLP) | Units | GTSP-1 / GTSP-2 | GTSP-1 / GTSP-4 | GTSP-2 | GTSP-3 | GTSP-4 | | SB-24 | SB-24 / SB-25 | | SB-25 | SB-26 | | SB-26 / SB-27 | SB-27 | | |
|--|----------------------------|-------|-----------------|-----------------|----------|-----------|----------|-----------|-----------|---------------|----------|-----------|----------|----------|---------------|-----------|----------|----------|
| | | | 5 - 15 | 0 - 7 | 5 - 15 | 0 - 9 | 9 - 25 | 5 - 11 | 11 - 17 | 5 - 17 | 0 - 5 | 13 - 25* | 5 - 13 | 5 - 21 | 21 - 25 | 0 - 5 | 5 - 9 | 9 - 15 |
| | | | 12/05/17 | 11/29/17 | 12/04/17 | 12/05/17 | 12/04/17 | 12/05/17 | 12/05/17 | 11/29/17 | 11/29/17 | 11/29/17 | 11/29/17 | 11/29/17 | 11/30/17 | 12/04/17 | 11/29/17 | 11/30/17 |
| Petroleum Hydrocarbons | | | | | | | | | | | | | | | | | | |
| TPH-DRO (C10-C28) | -- | mg/kg | NA | NA | <11.0 | 213 | 1,010 | 21.3 | <11.0 | 4,190 | NA | NA | 544 | 3,560 | 12.1 | NA | 2,810 | 56.4 |
| TPH-GRO (C6-C10) | -- | mg/kg | NA | NA | <87.0 | <21.0 | 375 | <24.0 | <22.0 | 455 | NA | NA | 1,090 | 536 | <62.0 | NA | 5,840 | <58.0 |
| PCBs | | | | | | | | | | | | | | | | | | |
| Aroclor 1016 | -- | mg/kg | <0.0370 | <0.0370 | <0.0400 | <0.0360 | <0.0370 | <0.0390 | <0.0360 | <0.0390 | <0.0420 | <0.0380 | <0.0410 | <0.0380 | <0.0380 | <0.0410 | <0.0420 | <0.0390 |
| Aroclor 1221 | -- | mg/kg | <0.0370 | <0.0370 | <0.0400 | <0.0360 | <0.0370 | <0.0390 | <0.0360 | <0.0390 | <0.0420 | <0.0380 | <0.0410 | <0.0380 | <0.0380 | <0.0410 | <0.0420 | <0.0390 |
| Aroclor 1232 | -- | mg/kg | <0.0370 | <0.0370 | <0.0400 | <0.0360 | <0.0370 | <0.0390 | <0.0360 | <0.0390 | <0.0420 | <0.0380 | <0.0410 | <0.0380 | <0.0380 | <0.0410 | <0.0420 | <0.0390 |
| Aroclor 1242 | -- | mg/kg | <0.0370 | <0.0370 | <0.0400 | <0.0360 | <0.0370 | <0.0390 | <0.0360 | <0.0390 | <0.0420 | <0.0380 | <0.0410 | <0.0380 | <0.0380 | <0.0410 | <0.0420 | <0.0390 |
| Aroclor 1248 | -- | mg/kg | <0.0370 | <0.0370 | <0.0400 | <0.0360 | <0.0370 | <0.0390 | <0.0360 | <0.0390 | <0.0420 | <0.0380 | <0.0410 | <0.0380 | <0.0380 | <0.0410 | <0.0420 | <0.0390 |
| Aroclor 1254 | -- | mg/kg | <0.0370 | <0.0370 | <0.0400 | <0.0360 | <0.0370 | <0.0390 | <0.0360 | <0.0390 | <0.0420 | <0.0380 | <0.0410 | <0.0380 | <0.0380 | <0.0410 | <0.0420 | <0.0390 |
| Aroclor 1260 | -- | mg/kg | <0.0370 | <0.0370 | <0.0400 | <0.0360 | <0.0370 | <0.0390 | <0.0360 | <0.0390 | <0.0420 | <0.0380 | <0.0410 | <0.0380 | <0.0380 | <0.0410 | <0.0420 | <0.0390 |
| Aroclor 1262 | -- | mg/kg | <0.0370 | <0.0370 | <0.0400 | <0.0360 | <0.0370 | <0.0390 | <0.0360 | <0.0390 | <0.0420 | <0.0380 | <0.0410 | <0.0380 | <0.0380 | <0.0410 | <0.0420 | <0.0390 |
| Aroclor 1268 | -- | mg/kg | <0.0370 | <0.0370 | <0.0400 | <0.0360 | <0.0370 | <0.0390 | <0.0360 | <0.0390 | <0.0420 | <0.0380 | <0.0410 | <0.0380 | <0.0380 | <0.0410 | <0.0420 | <0.0390 |
| VOCs | | | | | | | | | | | | | | | | | | |
| 1,1,1-Trichloroethane | -- | mg/kg | <0.0020 | <0.0020 | <0.0048 | <0.0020 | <0.64 | <0.0019 | <0.0020 | <0.22 | <0.29 | <0.0017 | <0.25 | <0.21 | <0.0053 | <0.0023 | <3.4 | <0.0049 |
| 1,1,2,2-Tetrachloroethane | -- | mg/kg | <0.0020 | <0.0020 | <0.0048 | <0.0020 | <0.64 | <0.0019 | <0.0020 | <0.22 | <0.29 | <0.0017 | <0.25 | <0.21 | <0.0053 | <0.0023 | <3.4 | <0.0049 |
| 1,1,2-trichloro-1,2,2-trifluoroethane | -- | mg/kg | <0.0050 | <0.0049 | <0.012 | <0.0050 | <1.6 | <0.0047 | <0.0050 | <0.54 | <0.72 | <0.0044 | <0.63 | <0.52 | <0.013 | <0.0057 | <8.4 | <0.012 |
| 1,1,2-Trichloroethane | -- | mg/kg | <0.0020 | <0.0020 | <0.0048 | <0.0020 | <0.64 | <0.0019 | <0.0020 | <0.22 | <0.29 | <0.0017 | <0.25 | <0.21 | <0.0053 | <0.0023 | <3.4 | <0.0049 |
| 1,1-Dichloroethane | -- | mg/kg | <0.00099 | <0.00098 | <0.0024 | <0.00099 | <0.32 | <0.00094 | <0.0010 | <0.11 | <0.14 | <0.00087 | <0.13 | <0.10 | <0.0026 | <0.0011 | <1.7 | <0.0025 |
| 1,1-Dichloroethene | -- | mg/kg | <0.00099 | <0.00098 | <0.0024 | <0.00099 | <0.32 | <0.00094 | <0.0010 | <0.11 | <0.14 | <0.00087 | <0.13 | <0.10 | <0.0026 | <0.0011 | <1.7 | <0.0025 |
| 1,2,3-Trichlorobenzene | -- | mg/kg | <0.0050 | <0.0049 | <0.012 | <0.0050 | <1.6 | <0.0047 | <0.0050 | <0.54 | <0.72 | <0.0044 | <0.63 | <0.52 | <0.013 | <0.0057 | <8.4 | <0.012 |
| 1,2,4-Trichlorobenzene | -- | mg/kg | <0.0050 | <0.0049 | <0.012 | <0.0050 | <1.6 | <0.0047 | <0.0050 | <0.54 | <0.72 | <0.0044 | <0.63 | <0.52 | <0.013 | <0.0057 | <8.4 | <0.012 |
| 1,2-Dibromo-3-chloropropane | -- | mg/kg | <0.0020 | <0.0020 | <0.0048 | <0.0020 | <0.64 | <0.0019 | <0.0020 | <0.22 | <0.29 | <0.0017 | <0.25 | <0.21 | <0.0053 | <0.0023 | <3.4 | <0.0049 |
| 1,2-Dibromoethane | -- | mg/kg | <0.00099 | <0.00098 | <0.0024 | <0.00099 | <0.32 | <0.00094 | <0.0010 | <0.11 | <0.14 | <0.00087 | <0.13 | <0.10 | <0.0026 | <0.0011 | <1.7 | <0.0025 |
| 1,2-Dichlorobenzene | -- | mg/kg | <0.00099 | <0.00098 | <0.0024 | <0.00099 | <0.32 | <0.00094 | <0.0010 | <0.11 | <0.14 | <0.00087 | <0.13 | <0.10 | <0.0026 | <0.0011 | <1.7 | <0.0025 |
| 1,2-Dichloroethane | -- | mg/kg | <0.00099 | <0.00098 | <0.0024 | <0.00099 | <0.32 | <0.00094 | <0.0010 | <0.11 | <0.14 | <0.00087 | <0.13 | <0.10 | <0.0026 | <0.0011 | <1.7 | <0.0025 |
| 1,2-Dichloropropane | -- | mg/kg | <0.0020 | <0.0020 | <0.0048 | <0.0020 | <0.64 | <0.0019 | <0.0020 | <0.22 | <0.29 | <0.0017 | <0.25 | <0.21 | <0.0053 | <0.0023 | <3.4 | <0.0049 |
| 1,3-Dichlorobenzene | -- | mg/kg | <0.00099 | <0.00098 | <0.0024 | <0.00099 | <0.32 | <0.00094 | <0.0010 | <0.11 | <0.14 | <0.00087 | <0.13 | <0.10 | <0.0026 | <0.0011 | <1.7 | <0.0025 |
| 1,4-Dichlorobenzene | -- | mg/kg | <0.00099 | <0.00098 | <0.0024 | <0.00099 | <0.32 | <0.00094 | <0.0010 | <0.11 | <0.14 | <0.00087 | <0.13 | <0.10 | <0.0026 | <0.0011 | <1.7 | <0.0025 |
| 2-Butanone | -- | mg/kg | 0.0096 J | <0.0098 | 0.057 | <0.0099 | <3.2 | 0.011 | <0.010 | <1.1 | <1.4 | <0.0087 | <1.3 | <1.0 | <0.026 | <0.011 | <1.7 | <0.025 |
| 2-Hexanone | -- | mg/kg | <0.0050 | <0.0049 | <0.012 | <0.0050 | <1.6 | <0.0047 | <0.0050 | <0.54 | <0.72 | <0.0044 | <0.63 | <0.52 | <0.013 | <0.0057 | <8.4 | <0.012 |
| 4-Methyl-2-pentanone | -- | mg/kg | <0.0050 | <0.0049 | <0.012 | <0.0050 | <1.6 | <0.0047 | <0.0050 | <0.54 | <0.72 | <0.0044 | <0.63 | <0.52 | <0.013 | <0.0057 | <8.4 | <0.012 |
| Acetone | -- | mg/kg | 0.069 | <0.0098 | 0.31 | <0.0099 | <3.2 | 0.069 | 0.038 | <1.1 | <1.4 | 0.0057 J | <1.3 | <1.0 | 0.067 | <0.011 | <1.7 | 0.12 |
| Benzene | -- | mg/kg | 0.028 | 0.017 | 0.086 | 0.014 | 0.99 | <0.0047 | <0.0050 | 8.1 | 2.9 | 0.0080 | 17 | 8.0 | 0.054 | 0.010 | 28 | 0.082 |
| Bromochloromethane | -- | mg/kg | <0.0050 | <0.0049 | <0.012 | <0.0050 | <1.6 | <0.0047 | <0.0050 | <0.54 | <0.72 | <0.0044 | <0.63 | <0.52 | <0.013 | <0.0057 | <8.4 | <0.012 |
| Bromodichloromethane | -- | mg/kg | <0.0020 | <0.0020 | <0.0048 | <0.0020 | <0.64 | <0.0019 | <0.0020 | <0.22 | <0.29 | <0.0017 | <0.25 | <0.21 | <0.0053 | <0.0023 | <3.4 | <0.0049 |
| Bromoform | -- | mg/kg | <0.0050 | <0.0049 | <0.012 | <0.0050 | <1.6 | <0.0047 | <0.0050 | <0.54 | <0.72 | <0.0044 | <0.63 | <0.52 | <0.013 | <0.0057 | <8.4 | <0.012 |
| Bromomethane | -- | mg/kg | <0.0050 | <0.0049 | <0.012 | <0.0050 | <1.6 | <0.0047 | <0.0050 | <0.54 | <0.72 | <0.0044 | <0.63 | <0.52 | <0.013 | <0.0057 | <8.4 | <0.012 |
| Carbon Disulfide | -- | mg/kg | 0.00097 J | <0.0020 | 0.0050 | <0.0020 | <0.64 | 0.00075 J | 0.00062 J | 0.13 J | <0.29 | <0.0017 | 0.11 J | <0.21 | <0.0053 | <0.0023 | <3.4 | 0.0020 J |
| Carbon Tetrachloride | -- | mg/kg | <0.0020 | <0.0020 | <0.0048 | <0.0020 | <0.64 | <0.0019 | <0.0020 | <0.22 | <0.29 | <0.0017 | <0.25 | <0.21 | <0.0053 | <0.0023 | <3.4 | <0.0049 |
| Chlorobenzene | -- | mg/kg | <0.0020 | <0.0020 | <0.0048 | <0.0020 | <0.64 | <0.0019 | <0.0020 | <0.22 | <0.29 | <0.0017 | <0.25 | <0.21 | <0.0053 | <0.0023 | <3.4 | <0.0049 |
| Chloroethane | -- | mg/kg | <0.0050 | <0.0049 | <0.012 | <0.0050 | <1.6 | <0.0047 | <0.0050 | <0.54 | <0.72 | <0.0044 | <0.63 | <0.52 | <0.013 | <0.0057 | <8.4 | <0.012 |
| Chloroform | -- | mg/kg | <0.0020 | <0.0020 | <0.0048 | <0.0020 | <0.64 | <0.0019 | <0.0020 | <0.22 | <0.29 | <0.0017 | <0.25 | <0.21 | <0.0053 | <0.0023 | <3.4 | <0.0049 |
| Chloromethane | -- | mg/kg | <0.0050 | <0.0049 | <0.012 | <0.0050 | <1.6 | <0.0047 | <0.0050 | <0.54 | <0.72 | <0.0044 | <0.63 | <0.52 | <0.013 | <0.0057 | <8.4 | <0.012 |
| cis-1,2-Dichloroethene | -- | mg/kg | <0.00099 | <0.00098 | <0.0024 | <0.00099 | <0.32 | <0.00094 | <0.0010 | <0.11 | <0.14 | <0.00087 | <0.13 | <0.10 | <0.0026 | <0.0011 | <1.7 | <0.0025 |
| cis-1,3-Dichloropropene | -- | mg/kg | <0.0020 | <0.0020 | <0.0048 | <0.0020 | <0.64 | <0.0019 | <0.0020 | <0.22 | <0.29 | <0.0017 | <0.25 | <0.21 | <0.0053 | <0.0023 | <3.4 | <0.0049 |
| Cyclohexane | -- | mg/kg | 0.0028 | <0.0020 | 0.031 | 0.00056 J | 0.77 | <0.0019 | <0.0020 | 2.0 | 0.23 J | <0.0017 | 0.35 | 0.11 J | <0.0053 | 0.00047 J | 3.4 | 0.0074 |
| Dibromochloromethane | -- | mg/kg | <0.0020 | <0.0020 | <0.0048 | <0.0020 | <0.64 | <0.0019 | <0.0020 | <0.22 | <0.29 | <0.0017 | <0.25 | <0.21 | <0.0053 | <0.0023 | <3.4 | <0.0049 |
| Dichlorodifluoromethane | -- | mg/kg | <0.0050 | <0.0049 | <0.012 | <0.0050 | <1.6 | <0.0047 | <0.0050 | <0.54 | <0.72 | <0.0044 | <0.63 | <0.52 | <0.013 | <0.0057 | <8.4 | <0.012 |
| Ethylbenzene | -- | mg/kg | 0.015 | 0.0060 | 0.0083 | 0.020 | 2.9 | <0.00094 | <0.0010 | 15 | 5.9 | 0.0044 | 15 | 11 | 0.061 | 0.0028 | 27 | 0.046 |
| Isopropylbenzene | -- | mg/kg | 0.0032 | 0.00026 J | 0.024 | 0.0010 J | 0.50 J | <0.0019 | <0.0020 | 1.9 | 0.85 | 0.00032 J | 0.79 | 0.55 | 0.0031 J | <0.0023 | 6.2 | 0.0089 |
| m,p-Xylenes | -- | mg/kg | 0.031 | 0.034 | 0.040 | 0.077 | 11 | <0.00094 | <0.0010 | 89 | 45 | 0.016 | 86 | 37 | 0.20 | 0.015 | 230 | 0.19 |
| Methyl acetate | -- | mg/kg | <0.0050 | <0.0049 | <0.012 | <0.0050 | 0.99 J | <0.0047 | <0.0050 | <0.54 | 0.43 J | <0.0044 | 0.60 J | 0.39 J | <0.013 | <0.0057 | <8.4 | <0.012 |
| Methyl tert-butyl ether | -- | mg/kg | <0.00099 | <0.00098 | <0.0024 | <0.00099 | <0.32 | <0.00094 | <0.0010 | <0.11 | <0.14 | <0.00087 | <0.13 | <0.10 | <0.0026 | <0.0011 | <1.7 | <0.0025 |
| Methylcyclohexane | -- | mg/kg | 0.0095 | 0.00058 J | 0.14 | 0.0020 | 5.0 | <0.0019 | <0.0020 | 7.3 | 2.0 | <0.0017 | 3.1 | 0.37 | <0.0053 | 0.0022 J | 51 | 0.050 |
| Methylene Chloride | -- | mg/kg | <0.0050 | <0.0049 | <0.012 | <0.0050 | <1.6 | <0.0047 | <0.0050 | <0.54 | <0. | | | | | | | |

Table 3
PDI Soil Waste Characterization Analytical Results

New York State Electric & Gas Corporation
Clyde Former MGP Site
Clyde, New York
Remedial Design

| Location ID: Sample Depth(feet): Date Collected: | 6 NYCRR Part 371 (TCLP) | Units | GTSSB-1 / GTSSB-2 | GTSSB-1 / GTSSB-4 | GTSSB-2 | GTSSB-3 | | GTSSB-4 | | SB-24 | SB-24 / SB-25 | | SB-25 | SB-26 | | SB-26 / SB-27 | SB-27 | |
|--|----------------------------|-------|-------------------|-------------------|----------|----------|----------|----------|----------|----------|---------------|----------|----------|----------|----------|---------------|----------|----------|
| | | | 5 - 15 | 0 - 7 | 5 - 15 | 0 - 9 | 9 - 25 | 5 - 11 | 11 - 17 | 5 - 17 | 0 - 5 | 13 - 25* | 5 - 13 | 5 - 21 | 21 - 25 | 0 - 5 | 5 - 9 | 9 - 15 |
| | | | 12/05/17 | 11/29/17 | 12/04/17 | 12/05/17 | 12/04/17 | 12/05/17 | 12/05/17 | 11/29/17 | 11/29/17 | 11/29/17 | 11/29/17 | 11/29/17 | 11/29/17 | 12/04/17 | 11/29/17 | 11/30/17 |
| trans-1,3-Dichloropropene | -- | mg/kg | <0.0020 | <0.0020 | <0.0048 | <0.0020 | <0.64 | <0.0019 | <0.0020 | <0.22 | <0.29 | <0.0017 | <0.25 | <0.21 | <0.0053 | <0.0023 | <3.4 | <0.0049 |
| Trichloroethene | -- | mg/kg | <0.00099 | <0.00098 | <0.0024 | <0.00099 | <0.32 | <0.00094 | <0.0010 | <0.11 | <0.14 | <0.00087 | <0.13 | <0.10 | <0.0026 | <0.0011 | <1.7 | <0.0025 |
| Trichlorofluoromethane | -- | mg/kg | <0.0050 | <0.0049 | <0.012 | <0.0050 | <1.6 | <0.0047 | <0.0050 | <0.54 | <0.72 | <0.0044 | <0.63 | <0.52 | <0.013 | <0.0057 | <8.4 | <0.012 |
| Vinyl Chloride | -- | mg/kg | <0.0020 | <0.0020 | <0.0048 | <0.0020 | <0.64 | <0.0019 | <0.0020 | <0.22 | <0.29 | <0.0017 | <0.25 | <0.21 | <0.0053 | <0.0023 | <3.4 | <0.0049 |
| Xylenes (total) | -- | mg/kg | 0.044 | 0.047 | 0.064 | 0.10 | 15 | <0.00094 | <0.0010 | 120 | 65 | 0.022 | 120 | 54 | 0.26 | 0.021 | 340 | 0.27 |
| Total BTEX | -- | mg/kg | 0.096 | 0.12 | 0.17 | 0.18 | 23 | ND | ND | 190 | 87 | 0.053 | 210 | 89 | 0.47 | 0.058 | 460 | 0.46 |
| Total VOCs | -- | mg/kg | 0.32 J | 0.27 J | 0.95 J | 0.45 J | 64 J | 0.081 J | 0.038 J | 500 J | 230 J | 0.13 J | 510 J | 220 J | 1.3 J | 0.14 J | 1,200 | 1.3 J |
| TCLP VOCs | | | | | | | | | | | | | | | | | | |
| 1,1-Dichloroethene | 0.7 | mg/L | NA | <0.0050 | NA | NA | NA | NA | NA | NA | <0.0050 | NA | NA | NA | NA | NA | NA | NA |
| 1,2-Dichloroethane | -- | mg/L | NA | <0.0050 | NA | NA | NA | NA | NA | NA | <0.0050 | NA | NA | NA | NA | NA | NA | NA |
| 1,4-Dichlorobenzene | 7.5 | mg/L | NA | <0.0050 | NA | NA | NA | NA | NA | NA | <0.0050 | NA | NA | NA | NA | NA | NA | NA |
| 2-Butanone | 200 | mg/L | NA | <0.10 | NA | NA | NA | NA | NA | NA | <0.10 | NA | NA | NA | NA | NA | NA | NA |
| Benzene | 0.5 | mg/L | NA | <0.0025 | NA | NA | NA | NA | NA | NA | 0.018 | NA | NA | NA | NA | NA | NA | NA |
| Carbon Tetrachloride | 0.5 | mg/L | NA | <0.0050 | NA | NA | NA | NA | NA | NA | <0.0050 | NA | NA | NA | NA | NA | NA | NA |
| Chlorobenzene | 100 | mg/L | NA | <0.0050 | NA | NA | NA | NA | NA | NA | <0.0050 | NA | NA | NA | NA | NA | NA | NA |
| Chloroform | 6 | mg/L | NA | <0.0050 | NA | NA | NA | NA | NA | NA | <0.0050 | NA | NA | NA | NA | NA | NA | NA |
| Tetrachloroethene | 0.7 | mg/L | NA | <0.0050 | NA | NA | NA | NA | NA | NA | <0.0050 | NA | NA | NA | NA | NA | NA | NA |
| Trichloroethene | 0.5 | mg/L | NA | <0.0050 | NA | NA | NA | NA | NA | NA | <0.0050 | NA | NA | NA | NA | NA | NA | NA |
| Vinyl Chloride | 0.2 | mg/L | NA | <0.0050 | NA | NA | NA | NA | NA | NA | <0.0050 | NA | NA | NA | NA | NA | NA | NA |
| SVOCs | | | | | | | | | | | | | | | | | | |
| 1,2,4,5-Tetrachlorobenzene | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| 1,4-Dioxane | -- | mg/kg | <0.0390 | <0.0370 | <0.0390 | <0.0710 | <0.0740 | <0.0410 | <0.0400 | <0.190 | <0.0420 | <0.0390 | <0.0400 | <0.190 | <0.0370 | <0.0400 | <0.440 | <0.0410 |
| 2,3,4,6-Tetrachlorophenol | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| 2,4,5-Trichlorophenol | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| 2,4,6-Trichlorophenol | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| 2,4-Dichlorophenol | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| 2,4-Dimethylphenol | -- | mg/kg | 0.0861 J | 0.167 J | <0.190 | 0.176 J | 1.37 | <0.200 | <0.200 | 7.34 | 1.74 | <0.200 | 22.2 | 17.2 | 0.0819 J | 0.179 J | 56.5 | 0.0858 J |
| 2,4-Dinitrophenol | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| 2,4-Dinitrotoluene | -- | mg/kg | <0.0390 | <0.0370 | <0.0390 | <0.0710 | <0.0740 | <0.0410 | <0.0400 | <0.190 | <0.0420 | <0.0390 | <0.0400 | <0.190 | <0.0370 | <0.0400 | <0.440 | <0.0410 |
| 2,6-Dinitrotoluene | -- | mg/kg | <0.0390 | <0.0370 | <0.0390 | <0.0710 | <0.0740 | <0.0410 | <0.0400 | <0.190 | <0.0420 | <0.0390 | <0.0400 | <0.190 | <0.0370 | <0.0400 | <0.440 | <0.0410 |
| 2-Chloronaphthalene | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| 2-Chlorophenol | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| 2-Methylnaphthalene | -- | mg/kg | 0.0556 | 0.447 | 0.0199 J | 1.21 | 10.8 | <0.0410 | <0.0400 | 103 | 15.4 | 0.0848 | 18.8 | 68.4 | 0.133 | 0.199 | 202 | 0.362 |
| 2-Methylphenol | -- | mg/kg | 0.0413 J | 0.102 | <0.0770 | 0.101 J | 0.712 | <0.0810 | <0.0790 | 2.19 | 1.14 | <0.0780 | 3.31 | 3.57 | <0.0740 | 0.120 | 10.6 | <0.0810 |
| 2-Nitroaniline | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| 2-Nitrophenol | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| 3&4-Methylphenol | -- | mg/kg | 0.180 | 0.379 | <0.0770 | 0.378 | 1.73 | <0.0810 | <0.0790 | 6.72 | 2.64 | <0.0780 | 21.8 | 10.9 | 0.0879 | 0.419 | 23.6 | <0.0810 |
| 3,3'-Dichlorobenzidine | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| 3-Nitroaniline | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| 4,6-Dinitro-2-methylphenol | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| 4-Bromophenyl-phenylether | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| 4-Chloro-3-Methylphenol | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| 4-Chloroaniline | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| 4-Chlorophenyl-phenylether | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| 4-Nitroaniline | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| 4-Nitrophenol | -- | mg/kg | <0.390 | <0.370 | <0.390 | <0.710 | <0.740 | <0.410 | <0.400 | <1.90 | <0.420 | <0.390 | <0.400 | <1.90 | <0.370 | <0.400 | <4.40 | <0.410 |
| Acenaphthene | -- | mg/kg | 0.100 | 0.511 | 0.0726 | 0.217 | 2.58 | 0.0182 J | 0.0192 J | 14.5 | 3.63 | 0.0340 J | 2.08 | 11.8 | 0.0228 J | 0.196 | 34.4 | 0.215 |
| Acenaphthylene | -- | mg/kg | 0.192 | 1.50 | <0.0390 | 0.885 | 6.71 | <0.0410 | <0.0400 | 52.6 | 12.8 | 0.0409 | 9.48 | 40.5 | 0.0786 | 1.05 | 94.2 | 0.212 |
| Acetophenone | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | 0.511 | <0.200 | <0.200 | <0.950 | <0.190 | 0.0218 J | <2.20 | <0.200 |
| Anthracene | -- | mg/kg | 0.768 | 2.67 | 0.0312 J | 1.53 | 5.97 | <0.0410 | <0.0400 | 58.0 | 22.4 | 0.0755 | 8.69 | 37.0 | 0.141 | 1.20 | 145 | 0.615 |
| Atrazine | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| Benzaldehyde | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| Benzo(a)anthracene | -- | mg/kg | 2.05 | 4.98 | 0.0851 | 2.87 | 3.98 | 0.0456 | 0.0174 J | 35.9 | 44.9 | 0.0649 | 5.96 | 16.7 | 0.109 | 3.7 | | |

Table 3
PDI Soil Waste Characterization Analytical Results

New York State Electric & Gas Corporation
Clyde Former MGP Site
Clyde, New York
Remedial Design

| Location ID: Sample Depth(foot): Date Collected: | 6 NYCRR Part 371 (TCLP) | Units | GTSP-1 / GTSP-2 | GTSP-1 / GTSP-4 | GTSP-2 | GTSP-3 | | GTSP-4 | | SB-24 | SB-24 / SB-25 | | SB-25 | SB-26 | | SB-26 / SB-27 | SB-27 | |
|--|----------------------------|-------|-----------------|-----------------|----------|----------|----------|----------|----------|----------|---------------|----------|----------|----------|----------|---------------|----------|----------|
| | | | 5 - 15 | 0 - 7 | 5 - 15 | 0 - 9 | 9 - 25 | 5 - 11 | 11 - 17 | 5 - 17 | 0 - 5 | 13 - 25* | 5 - 13 | 5 - 21 | 21 - 25 | 0 - 5 | 5 - 9 | 9 - 15 |
| | | | 12/05/17 | 11/29/17 | 12/04/17 | 12/05/17 | 12/04/17 | 12/05/17 | 12/05/17 | 11/29/17 | 11/29/17 | 11/29/17 | 11/29/17 | 11/30/17 | 12/04/17 | 11/29/17 | 11/30/17 | 12/04/17 |
| bis(2-Ethylhexyl)phthalate | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| Butylbenzylphthalate | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| Caprolactam | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| Carbazole | -- | mg/kg | 0.103 | 0.540 | 0.0448 J | 0.334 | 2.36 | <0.0810 | <0.0790 | 11.3 | 3.98 | 0.0204 J | 3.36 | 9.02 | 0.0628 J | 0.289 | 30.5 | 0.137 |
| Chrysene | -- | mg/kg | 1.60 | 4.33 | 0.0660 | 2.26 | 2.92 | 0.0395 J | <0.0400 | 29.6 | 40.6 | 0.0500 | 5.19 | 13.9 | 0.0834 | 3.73 | 85.8 | 0.468 |
| Dibenzo(a,h)anthracene | -- | mg/kg | 0.332 | 0.701 | <0.0390 | 0.365 | 0.418 | <0.0410 | <0.0400 | 3.18 | 5.88 | <0.0390 | 0.669 | 1.77 | <0.0370 | 0.883 | 10.3 | 0.0742 |
| Dibenzofuran | -- | mg/kg | 0.104 | 0.641 | <0.0770 | 0.750 | 5.34 | <0.0810 | <0.0790 | 46.1 | 8.92 | 0.0547 J | 7.12 | 31.4 | 0.0719 J | 0.167 | 97.9 | 0.307 |
| Diethylphthalate | -- | mg/kg | 0.0498 J | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | 0.0518 J | <0.0800 | <0.890 | <0.0810 |
| Dimethylphthalate | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| Di-n-Butylphthalate | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| Di-n-Octylphthalate | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| Fluoranthene | -- | mg/kg | 2.08 | 6.71 | 0.125 | 2.87 | 8.60 | 0.0586 | <0.0400 | 77.1 | 75.7 | 0.157 | 12.9 | 43.7 | 0.188 | 3.94 | 163 | 0.905 |
| Fluorene | -- | mg/kg | 0.292 | 1.25 | 0.0368 J | 0.538 | 7.60 | <0.0410 | <0.0400 | 66.8 | 10.6 | 0.0764 | 9.18 | 43.2 | 0.110 | 0.257 | 147 | 0.506 |
| Hexachlorobenzene | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| Hexachlorobutadiene | -- | mg/kg | <0.0390 | <0.0370 | <0.0390 | <0.0710 | <0.0740 | <0.0410 | <0.0400 | <0.190 | <0.0420 | <0.0390 | <0.0400 | <0.190 | <0.0370 | <0.0400 | <0.440 | <0.0410 |
| Hexachlorocyclopentadiene | -- | mg/kg | <0.390 | <0.370 | <0.390 | <0.710 | <0.740 | <0.410 | <0.400 | <1.90 | <0.420 | <0.390 | <0.400 | <1.90 | <0.370 | <0.400 | <4.40 | <0.410 |
| Hexachloroethane | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| Indeno(1,2,3-cd)pyrene | -- | mg/kg | 0.689 | 2.30 | 0.0344 J | 0.889 | 1.13 | 0.0287 J | 0.0400 | 10.0 | 23.4 | 0.0364 J | 2.35 | 6.21 | 0.0301 J | 3.03 | 28.2 | 0.185 |
| Isophorone | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| Naphthalene | -- | mg/kg | 0.148 | 0.348 | 0.161 | 0.910 | 27.6 | <0.0410 | <0.0400 | 184 | 30.7 | 0.170 | 57.3 | 212 | 0.291 | 0.420 | 417 | 0.673 |
| Nitrobenzene | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| N-Nitroso-di-n-propylamine | -- | mg/kg | <0.0780 | <0.0730 | <0.0770 | <0.140 | <0.150 | <0.0810 | <0.0790 | <0.370 | <0.0830 | <0.0780 | <0.0800 | <0.380 | <0.0740 | <0.0800 | <0.890 | <0.0810 |
| N-Nitrosodiphenylamine | -- | mg/kg | <0.200 | <0.180 | <0.190 | <0.360 | <0.370 | <0.200 | <0.200 | <0.930 | <0.210 | <0.200 | <0.200 | <0.950 | <0.190 | <0.200 | <2.20 | <0.200 |
| Pentachlorophenol | -- | mg/kg | <0.160 | <0.150 | <0.150 | <0.280 | <0.300 | <0.160 | <0.160 | <0.750 | <0.170 | <0.160 | <0.160 | <0.760 | <0.150 | <0.160 | <1.80 | <0.160 |
| Phenanthrene | -- | mg/kg | 1.11 | 5.32 | 0.0824 | 3.64 | 15.7 | 0.0372 J | 0.0190 J | 134 | 59.5 | 0.246 | 19.2 | 98.6 | 0.331 | 1.85 | 327 | 1.30 |
| Phenol | -- | mg/kg | 0.0666 J | 0.139 | <0.0770 | 0.163 | 0.733 | <0.0810 | <0.0790 | 3.03 | 0.852 | <0.0780 | 1.80 | 2.64 | 0.0375 J | 0.161 | 2.25 | <0.0810 |
| Pyrene | -- | mg/kg | 2.04 | 5.95 | 0.109 | 3.00 | 6.33 | 0.0544 | <0.0400 | 62.6 | 70.1 | 0.161 | 11.1 | 38.1 | 0.169 | 4.86 | 141 | 0.776 |
| Total PAHs | -- | mg/kg | 16.2 | 48.2 | 1.04 J | 28.0 | 108 | 0.455 J | 0.0741 J | 890 | 518 | 1.36 J | 175 | 667 | 1.91 J | 39.5 | 2,090 | 8.22 |
| Total SVOCs | -- | mg/kg | 16.7 J | 49.9 J | 1.10 J | 29.7 J | 121 | 0.455 J | 0.0741 J | 970 | 536 | 1.46 J | 215 | 740 | 2.23 J | 40.5 J | 2,320 | 8.85 J |
| TCLP VOCs | | | | | | | | | | | | | | | | | | |
| 1,4-Dichlorobenzene | 7.5 | mg/L | NA | <0.0200 | NA | NA | NA | NA | NA | NA | <0.0200 | NA | NA | NA | NA | NA | NA | NA |
| 2,4,5-Trichlorophenol | 400 | mg/L | NA | <0.0500 | NA | NA | NA | NA | NA | NA | <0.0500 | NA | NA | NA | NA | NA | NA | NA |
| 2,4,6-Trichlorophenol | 2 | mg/L | NA | <0.0500 | NA | NA | NA | NA | NA | NA | <0.0500 | NA | NA | NA | NA | NA | NA | NA |
| 2,4-Dinitrotoluene | 0.13 | mg/L | NA | <0.0200 | NA | NA | NA | NA | NA | NA | <0.0200 | NA | NA | NA | NA | NA | NA | NA |
| 2-Methylphenol | 200 | mg/L | NA | <0.0200 | NA | NA | NA | NA | NA | NA | <0.0200 | NA | NA | NA | NA | NA | NA | NA |
| 3&4-Methylphenol | -- | mg/L | NA | <0.0200 | NA | NA | NA | NA | NA | NA | <0.0200 | NA | NA | NA | NA | NA | NA | NA |
| Hexachlorobenzene | 0.13 | mg/L | NA | <0.0200 | NA | NA | NA | NA | NA | NA | <0.0200 | NA | NA | NA | NA | NA | NA | NA |
| Hexachlorobutadiene | 0.5 | mg/L | NA | <0.0100 | NA | NA | NA | NA | NA | NA | <0.0100 | NA | NA | NA | NA | NA | NA | NA |
| Hexachloroethane | 3 | mg/L | NA | <0.0500 | NA | NA | NA | NA | NA | NA | <0.0500 | NA | NA | NA | NA | NA | NA | NA |
| Nitrobenzene | 2 | mg/L | NA | <0.0200 | NA | NA | NA | NA | NA | NA | <0.0200 | NA | NA | NA | NA | NA | NA | NA |
| Pentachlorophenol | 100 | mg/L | NA | <0.100 | NA | NA | NA | NA | NA | NA | <0.100 | NA | NA | NA | NA | NA | NA | NA |
| Pyridine | 5 | mg/L | NA | <0.0200 | NA | NA | NA | NA | NA | NA | <0.0200 | NA | NA | NA | NA | NA | NA | NA |
| Pesticides | | | | | | | | | | | | | | | | | | |
| 4,4'-DDD | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| 4,4'-DDE | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| 4,4'-DDT | -- | mg/kg | <0.00075 | 0.0064 | NA | NA | NA | NA | NA | NA | 0.0174 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| Aldrin | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| alpha-BHC | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| alpha-Chlordane | -- | mg/kg | <0.00075 | 0.0042 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| beta-BHC | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| delta-BHC | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| Dieldrin | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| Endosulfan sulfate | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| Endosulfan-I | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| Endosulfan-II | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| Endrin | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| Endrin aldehyde | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| Endrin ketone | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| gamma-BHC (Lindane) | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| gamma-Chlordane | -- | mg/kg | <0.00075 | 0.0031 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |
| Heptachlor | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA | <0.00081 | NA | NA |

Table 3
PDI Soil Waste Characterization Analytical Results

New York State Electric & Gas Corporation
Clyde Former MGP Site
Clyde, New York
Remedial Design

| Location ID: Sample Depth(feet): Date Collected: | 6 NYCRR Part 371 (TCLP) | Units | GTSPB-1 / GTSPB-2 5 - 15 12/05/17 | GTSPB-1 / GTSPB-4 0 - 7 11/29/17 | GTSPB-2 5 - 15 12/04/17 | GTSPB-3 0 - 9 12/04/17 | GTSPB-4 5 - 11 12/05/17 | SB-24 5 - 17 11/29/17 | SB-24 / SB-25 0 - 5 11/29/17 | SB-25 5 - 13 11/29/17 | SB-26 5 - 21 11/30/17 | SB-26 / SB-27 0 - 5 11/30/17 | SB-27 5 - 9 12/04/17 |
|--|----------------------------|-------|---|--|-------------------------------|------------------------------|-------------------------------|-----------------------------|------------------------------------|-----------------------------|-----------------------------|------------------------------------|----------------------------|
| Heptachlor epoxide | -- | mg/kg | <0.00075 | <0.00074 | NA | NA | NA | NA | <0.00084 | <0.00076 | NA | NA | NA |
| Methoxychlor | -- | mg/kg | <0.0015 | <0.0015 | NA | NA | NA | NA | <0.0017 | <0.0015 | NA | NA | NA |
| Toxaphene | -- | mg/kg | <0.019 | <0.019 | NA | NA | NA | NA | <0.021 | <0.019 | NA | NA | NA |
| TCLP Pesticides | | | | | | | | | | | | | |
| Chlordane | -- | mg/L | NA | <0.0033 | NA | NA | NA | NA | <0.0033 | NA | NA | NA | NA |
| Endrin | 0.02 | mg/L | NA | <0.000067 | NA | NA | NA | NA | <0.000067 | NA | NA | NA | NA |
| gamma-BHC (Lindane) | 0.4 | mg/L | NA | <0.000067 | NA | NA | NA | NA | <0.000067 | NA | NA | NA | NA |
| Heptachlor | 0.008 | mg/L | NA | <0.000067 | NA | NA | NA | NA | <0.000067 | NA | NA | NA | NA |
| Heptachlor epoxide | -- | mg/L | NA | <0.000067 | NA | NA | NA | NA | <0.000067 | NA | NA | NA | NA |
| Methoxychlor | 10 | mg/L | NA | <0.00013 | NA | NA | NA | NA | 0.000099 J | NA | NA | NA | NA |
| Toxaphene | 0.5 | mg/L | NA | <0.0017 | NA | NA | NA | NA | <0.0017 | NA | NA | NA | NA |
| Herbicides | | | | | | | | | | | | | |
| 2,4,5-T | -- | mg/kg | <0.0037 | <0.0037 | NA | NA | NA | NA | <0.0041 | <0.0039 | NA | NA | NA |
| 2,4,5-TP (Silvex) | -- | mg/kg | <0.0037 | <0.0037 | NA | NA | NA | NA | <0.0041 | <0.0039 | NA | NA | NA |
| 2,4-D | -- | mg/kg | <0.018 | <0.019 | NA | NA | NA | NA | <0.021 | <0.02 | NA | NA | NA |
| 2,4-DB | -- | mg/kg | <0.018 | <0.019 | NA | NA | NA | NA | <0.021 | <0.02 | NA | NA | NA |
| Dalapon | -- | mg/kg | <0.0037 | <0.0037 | NA | NA | NA | NA | <0.0041 | <0.0039 | NA | NA | NA |
| Dicamba | -- | mg/kg | <0.0037 | <0.0037 | NA | NA | NA | NA | <0.0041 | <0.0039 | NA | NA | NA |
| Dichloroprop | -- | mg/kg | <0.018 | <0.019 | NA | NA | NA | NA | <0.021 | <0.02 | NA | NA | NA |
| Dinoseb | -- | mg/kg | <0.018 | <0.019 | NA | NA | NA | NA | <0.021 | <0.02 | NA | NA | NA |
| MCPA | -- | mg/kg | <1.8 | <1.9 | NA | NA | NA | NA | <2.1 | <2 | NA | NA | NA |
| MCP | -- | mg/kg | <1.8 | <1.9 | NA | NA | NA | NA | <2.1 | <2 | NA | NA | NA |
| Pentachlorophenol | -- | mg/kg | <0.0018 | <0.0019 | NA | NA | NA | NA | <0.0021 | <0.002 | NA | NA | NA |
| TCLP Herbicides | | | | | | | | | | | | | |
| 2,4,5-TP (Silvex) | 1 | mg/L | NA | <0.0012 | NA | NA | NA | NA | <0.0012 | NA | NA | NA | NA |
| 2,4-D | 10 | mg/L | NA | <0.0042 | NA | NA | NA | NA | <0.0042 | NA | NA | NA | NA |
| Inorganics | | | | | | | | | | | | | |
| Aluminum | -- | mg/kg | 11,200 | 7,680 | 11,300 | 5,520 | 6,030 | 9,860 | 14,800 | 9,730 | 8,240 | 17,700 | 8,850 |
| Antimony | -- | mg/kg | <2.50 | <2.20 | <2.50 | <11.0 | <2.20 | <2.50 | <2.40 | <2.30 | <2.50 | <2.30 | <2.40 |
| Arsenic | -- | mg/kg | 3.90 | 6.50 | 4.20 | 5.00 | 5.80 | 4.50 | 5.10 | 4.70 | 19.4 | <2.30 | 3.40 |
| Barium | -- | mg/kg | 65.5 | 72.5 | 63.9 | 47.8 | 28.1 | 60.0 | 76.8 | 201 | 162 | 30.4 | 72.2 |
| Beryllium | -- | mg/kg | 0.530 | 0.300 | 0.590 | 0.310 | 0.470 | 0.510 | 0.710 | 0.480 | 0.310 | 0.630 | 0.300 |
| Cadmium | -- | mg/kg | <0.620 | <0.550 | <0.630 | 1.00 | <0.560 | <0.620 | <0.590 | <0.580 | <0.640 | <0.600 | <0.630 |
| Calcium | -- | mg/kg | 15,000 | 77,300 | 8,640 | 128,000 | 80,700 | 2,320 | 15,000 | 23,300 | 41,100 | 57,700 | 8,810 |
| Chromium | -- | mg/kg | 15.9 | 10.1 | 15.9 | 7.50 | 8.10 | 12.8 | 20.1 | 13.3 | 12.3 | 24.9 | 12.0 |
| Cobalt | -- | mg/kg | 6.20 | 6.20 | 12.6 | 6.20 | <5.60 | 7.20 | 11.5 | 6.30 | <6.40 | 9.30 | <6.00 |
| Copper | -- | mg/kg | 7.80 | 29.2 | 9.70 | 25.7 | 15.8 | 21.8 | 20.7 | 11.9 | 24.5 | 3.20 | 14.5 |
| Iron | -- | mg/kg | 16,800 | 14,200 | 20,700 | 9,910 | 11,700 | 17,500 | 21,000 | 18,300 | 14,600 | 20,900 | 12,600 |
| Lead | -- | mg/kg | 8.70 | 138 | 8.40 | 32.1 | 8.00 | 7.50 | 8.60 | 348 | 490 | <2.30 | 20.8 |
| Magnesium | -- | mg/kg | 9,680 | 22,500 | 7,850 | 24,500 | 13,200 | 3,440 | 12,500 | 10,100 | 7,080 | 40,000 | 3,980 |
| Manganese | -- | mg/kg | 269 | 556 | 201 | 414 | 431 | 181 | 452 | 275 | 353 | 402 | 209 |
| Mercury | -- | mg/kg | <0.0380 | 0.240 | <0.0370 | 0.270 | <0.0380 | <0.0370 | <0.0370 | 0.0740 | 0.670 | <0.0390 | 0.110 |
| Nickel | -- | mg/kg | 14.2 | 14.6 | 23.0 | 13.6 | 11.7 | 17.3 | 25.7 | 13.0 | 13.1 | 27.9 | 12.7 |
| Potassium | -- | mg/kg | 2,590 | 1,650 | 3,300 | 1,620 | 2,040 | 2,320 | 4,270 | 2,740 | 1,940 | 6,670 | 1,990 |
| Selenium | -- | mg/kg | <2.50 | <2.20 | <2.50 | <2.10 | <2.20 | <2.50 | <2.40 | <2.30 | <2.50 | <2.40 | <2.50 |
| Silver | -- | mg/kg | <0.620 | <0.550 | <0.630 | <0.540 | <0.560 | <0.620 | <0.590 | <0.580 | <0.640 | <0.600 | <0.630 |
| Sodium | -- | mg/kg | <1,200 | <1,100 | <1,300 | <1,100 | <1,100 | <1,200 | <1,200 | <1,200 | <1,300 | <1,200 | <1,300 |
| Thallium | -- | mg/kg | <1.20 | <1.10 | <1.30 | <1.10 | <1.10 | <1.20 | <1.20 | <1.20 | <1.30 | <1.20 | <1.30 |
| Vanadium | -- | mg/kg | 20.8 | 17.7 | 20.7 | 12.5 | 14.2 | 19.3 | 24.1 | 18.7 | 18.5 | 22.2 | 17.3 |
| Zinc | -- | mg/kg | 41.0 | 102 | 43.2 | 49.2 | 43.1 | 43.3 | 50.7 | 109 | 223 | 24.7 | 49.1 |
| TCLP Inorganics | | | | | | | | | | | | | |
| Arsenic | 5 | mg/L | NA | <0.500 | NA | NA | NA | NA | NA | NA | <0.500 | NA | NA |
| Barium | 100 | mg/L | NA | <1.00 | NA | NA | NA | NA | NA | NA | <1.00 | NA | NA |
| Cadmium | 1 | mg/L | NA | <0.0250 | NA | NA | NA | NA | NA | NA | <0.0250 | NA | NA |
| Chromium | 5 | mg/L | NA | <0.0500 | NA | NA | NA | NA | NA | NA | <0.0500 | NA | NA |
| Lead | 5 | mg/L | NA | <0.500 | NA | NA | NA | NA | NA | NA | 0.900 | NA | NA |
| Mercury | 0.2 | mg/L | NA | <0.000200 | NA | NA | NA | NA | NA | NA | <0.000200 | NA | NA |
| Selenium | 1 | mg/L | NA | <0.500 | NA | NA | NA | NA | NA | NA | <0.500 | NA | NA |
| Silver | 5 | mg/L | NA | <0.0500 | NA | NA | NA | NA | NA | NA | <0.0500 | NA | NA |

Table 3
PDI Soil Waste Characterization Analytical Results

New York State Electric & Gas Corporation
Clyde Former MGP Site
Clyde, New York
Remedial Design

| Location ID: | 6 NYCRR | | GTSB-1 / GTSB-2 | GTSB-1 / GTSB-4 | GTSB-2 | GTSB-3 | | GTSB-4 | | SB-24 | SB-24 / SB-25 | | SB-25 | SB-26 | | SB-26 / SB-27 | | SB-27 |
|---------------------------|-----------------|---------|-----------------|-----------------|----------|----------|----------|----------|----------|----------|---------------|----------|----------|----------|----------|---------------|----------|----------|
| Sample Depth(feet): | | | 5 - 15 | 0 - 7 | 5 - 15 | 0 - 9 | 9 - 25 | 5 - 11 | 11 - 17 | 5 - 17 | 0 - 5 | 13 - 25* | 5 - 13 | 5 - 21 | 21 - 25 | 0 - 5 | 5 - 9 | 9 - 15 |
| Date Collected: | Part 371 (TCLP) | Units | 12/05/17 | 11/29/17 | 12/04/17 | 12/05/17 | 12/04/17 | 12/05/17 | 12/05/17 | 11/29/17 | 11/29/17 | 11/29/17 | 11/29/17 | 11/30/17 | 12/04/17 | 11/29/17 | 11/30/17 | 12/04/17 |
| Miscellaneous | | | | | | | | | | | | | | | | | | |
| Corrosivity as pH | -- | SU | 7.27 NC | 7.85 NC | NA | NA | NA | NA | NA | NA | 7.50 NC | 7.43 NC | NA | NA | NA | 7.07 NC | NA | NA |
| Cyanide | -- | mg/kg | NA | NA | <0.180 | 0.960 | <0.240 | <0.180 | <0.150 | 3.00 | NA | NA | 1.00 | 0.390 | <0.170 | NA | 9.80 | 0.360 |
| Cyanide Reactivity | -- | mg/kg | NA | <11.0 | NA | NA | NA | NA | NA | NA | <12.0 | NA | NA | NA | NA | NA | NA | NA |
| Heat Content, BTU | -- | BTU/lb | NA | NA | 3,080 | 1,410 | 2,820 | 1,180 | 1,130 | 1,350 | NA | NA | 146 | 1,960 | 797 | NA | 1,480 | 2,820 |
| Ignitability (Flashpoint) | -- | °F | NA | >200 | NA | NA | NA | NA | NA | NA | >200 | NA | NA | NA | NA | NA | NA | NA |
| Paint Filter Test | -- | ml/100g | <0.500 | <0.500 | NA | NA | NA | NA | NA | NA | <0.500 | <0.500 | NA | NA | NA | <0.500 | NA | NA |
| Percent Sulfur | -- | % | NA | NA | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | <0.100 | NA | NA | <0.100 | 0.200 | <0.100 | NA | 0.270 | <0.100 |
| Sulfide Reactivity | -- | mg/kg | NA | <110 | NA | NA | NA | NA | NA | NA | <120 | NA | NA | NA | NA | NA | NA | NA |

Table 3
PDI Soil Waste Characterization Analytical Results

New York State Electric & Gas Corporation
Clyde Former MGP Site
Clyde, New York
Remedial Design

Notes:

1. Samples were collected by Arcadis on the dates indicated.
2. TPH = total petroleum hydrocarbons.
3. DRO = diesel range organics.
4. GRO = gasoline range organics.
5. PCBs = polychlorinated biphenyls.
6. VOCs = Target Compound List (TCL) Volatile Organic Compounds.
7. SVOCs = TCL Semi-Volatile Organic Compounds.
8. TCLP = toxicity characteristic leaching procedure.
9. Laboratory analysis was performed by SGS laboratory of Dayton, New Jersey for one or more of the analyses listed below:
 - PCBs using United States Environmental Protection Agency (USEPA) SW-846 Method 8082A.
 - Target compound list (TCL) VOCs using USEPA SW-846 Method 8260C.
 - TCL SVOCs using USEPA SW-846 Method 8270D.
 - Target analyte list (TAL) metals using USEPA SW-846 Methods 6010C and 7471B.
 - Total cyanide using USEPA SW-846 Method 9012B.
 - TPH GRO and DRO using USEPA SW-846 Method 8015C
 - Toxic Characteristic Leaching Procedure (TCLP) extraction by USEPA SW-846 Method 1311 and analysis by:
 - VOCs using USEPA SW-846 Method 8260C.
 - SVOCs using USEPA SW-846 Method 8270D.
 - Inorganics using USEPA SW-846 Methods 6010C and 7471A.
 - Pesticides using USEPA SW-846 Method 8081B.
 - Herbicides using USEPA SW-846 Method 8151A.
 - % sulfur using American Society for Testing and Materials (ASTM) method D129-95.
 - Heating value using ASTM method D240-92.
 - Ignitability using USEPA SW-846 Method 1010A/ASTM D93.
 - Corrosivity as pH using USEPA SW-846 Method 9045D.
 - Reactive sulfide and cyanide using USEPA SW-846 Chapter 7 Methods.
 - Free liquid using USEPA SW-846 Method 9095B.
10. mg/kg = milligrams per kilogram, which is equivalent to parts per million (ppm).
11. mg/L = milligrams per liter, which is equivalent to ppm.
12. BTU/LB = British Thermal Unit per pound.
13. SU = standard unit.
14. °F = degrees Fahrenheit.
15. mL/100g = milliliters per 100 grams.
16. Data qualifiers are defined as follows:
 - < - Constituent not detected at a concentration above the reported detection limit.
 - J - Indicates that the associated numerical value is an estimated concentration.
17. * = Sample SB-24 / SB-25 (13-25) is a composite sample of SB-24 (17-25) and SB-25 (13-19).
18. NA = not analyzed.
19. ND = not detected.
20. Results have not been validated.

Table 4
PDI Hydraulic Testing Results

New York State Electric & Gas Corporation
Clyde Former MGP Site
Clyde, New York
Remedial Design

| Well ID | Date | Static Depth to Water (ft bTOC) | Steady State Drawdown (ft) | Steady State Flow Rate (mL/min) | Hydraulic Conductivity (K) (cm/s) | | K (ft/day) |
|---------|------------|---------------------------------|----------------------------|---------------------------------|-----------------------------------|----------------------|------------|
| | | | | | Radial Flow Model | Half Ellipsoid Model | |
| MW-4 | 12/13/2017 | 8:09:36 AM | 1:40:48 AM | 1001 | 3.4E-02 | -- | 96 |
| MW-6B | 12/13/2017 | 12:57:36 AM | -- | -- | see footnote | | |
| MW-9 | 12/14/2017 | 8:09:36 PM | 4:33:36 AM | 740 | -- | 7.2E-04 | 2.0 |
| MW-9B | 12/13/2017 | 2:09:36 AM | -- | -- | see footnote | | |
| MW-10 | 12/14/2017 | 4:04:48 AM | 8:24:00 AM | 200 | -- | 1.0E-04 | 0.3 |
| MW-10B | 12/13/2017 | 1:55:12 AM | -- | -- | see footnote | | |
| MW-11 | 12/14/2017 | 10:48:00 AM | 10:33:36 AM | 910 | -- | 2.0E-03 | 5.7 |
| MW-11B | 12/13/2017 | 5:31:12 PM | -- | -- | see footnote | | |

Notes:

1. ft = feet
2. bTOC = below top of casing
3. cm/s = centimeter per second
4. ft/day = feet per day
5. K = hydraulic conductivity
6. mL/min = milliliter per minute
7. -- = not applicable
8. Steady-state drawdown not sustainable at MW-6B, MW-9B, MW-10B, and MW-11B at 100 mL/min. K estimated to be less than 1x10⁻⁶ cm/sec or 3x10⁻² ft/day.

References:

1. Aragon-Jose, A.T. and Robbins, G.A., 2011. Low-Flow Hydraulic Conductivity Tests at Wells that Cross the Water Table. Groundwater, 49(3), pp.426-431.
2. Robbins, G.A., A.T. Aragon-Jose, A. Romero, 2009. Determining Hydraulic Conductivity Using Pumping data from Low-Flow Sampling. Ground Water, Vol. 47, No. 2, p. 271.

Table 5
PDI Groundwater Treatability Analytical Results (ppb)

New York State Electric & Gas Corporation
Clyde Former MGP Site
Clyde, New York
Remedial Design

| Location ID: | MW-10 | MW-10B |
|-------------------------------|----------|-----------|
| Date Collected: | 12/14/17 | 12/14/17 |
| Detected VOCs | | |
| Benzene | 1,100 | 7.7 |
| Carbon Disulfide | <10 | 3.7 |
| Chloroethane | <5.0 | 0.76 J |
| Cyclohexane | 8.2 J | <5.0 |
| Ethylbenzene | 280 | <1.0 |
| Isopropylbenzene | 10 | <1.0 |
| m,p-Xylenes | 370 | <1.0 |
| o-Xylene | 200 | 0.28 J |
| Toluene | 270 | <1.0 |
| Xylenes (total) | 570 | 0.28 J |
| Detected SVOCs | | |
| 2,4-Dichlorophenol | <2.00 | 2.90 |
| 2,4-Dimethylphenol | 4.50 J | <5.00 |
| 2-Methylnaphthalene | 9.10 | <1.00 |
| 2-Methylphenol | 1.80 J | <2.00 |
| 3&4-Methylphenol | 3.00 | <2.00 |
| Acenaphthene | 8.20 | <1.00 |
| Acenaphthylene | 0.480 J | <1.00 |
| Acetophenone | 1.60 J | 0.730 J |
| Biphenyl | 1.80 | <1.00 |
| Carbazole | 0.600 J | <1.00 |
| Dibenzofuran | 0.990 J | <5.00 |
| Fluorene | 0.330 J | <1.00 |
| Naphthalene | 271 | <1.00 |
| Phenol | 8.60 | <2.00 |
| Detected Pesticides | | |
| alpha-BHC | 0.1 | <0.0067 |
| Heptachlor | 0.0059 J | <0.0067 |
| Detected Miscellaneous | | |
| BOD, 5 Day | 9,900 | <69,000 |
| Hardness, Total as CaCO3 | 540,000 | 1,420,000 |
| Nitrogen, Ammonia | 7,800 | 1,000 |
| Solids, Total Suspended | 38,800 | 212,000 |
| HEM Oil and Grease | <5,300 | 16,500 |

Table 5
PDI Groundwater Treatability Analytical Results (ppb)

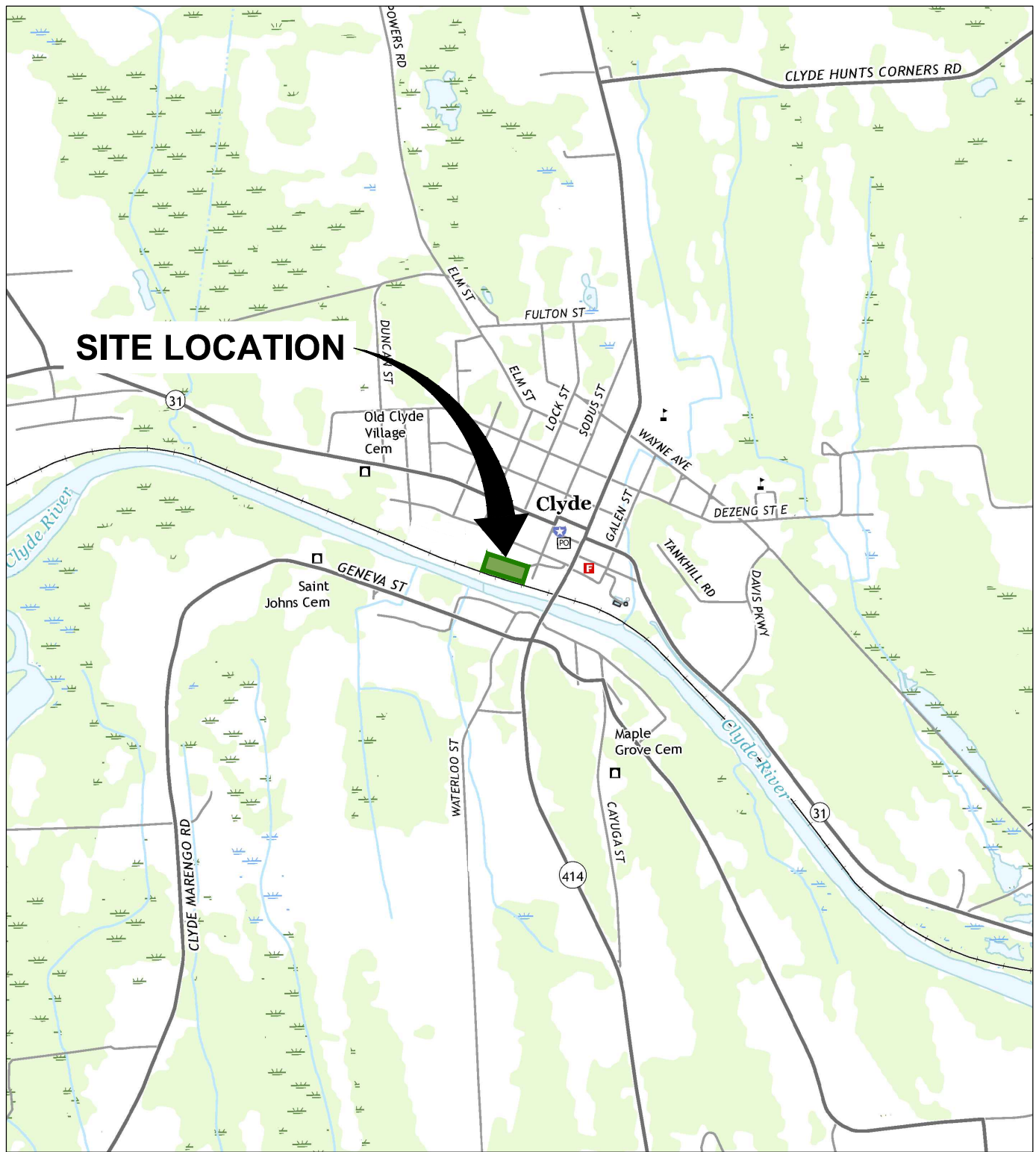
New York State Electric & Gas Corporation
Clyde Former MGP Site
Clyde, New York
Remedial Design

Notes:

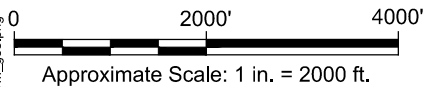
1. Samples were collected by Arcadis on the dates indicated.
2. VOCs = Target Compound List (TCL) Volatile Organic Compounds.
3. SVOCs = TCL Semi-Volatile Organic Compounds.
4. Laboratory analysis was performed by SGS laboratory of Dayton, New Jersey for one or more of the analyses listed below:
 - Target compound list (TCL) volatile organic compounds (VOCs) using USEPA SW-846 Method 8260C.
 - TCL semi-volatile organic compounds (SVOCs) using USEPA SW-846 Method 8270D.
 - Pesticides using USEPA SW-846 Method 8081B.
 - Biological oxygen demand (BOD) using Standard Method (SM) 5210B-11.
 - Hardness using SM2340C-11
 - Nitrogen, ammonia using SM 4500NH3H-11
 - Total suspended solids (TSS) using SM 2540D-11.
 - Hexane extractable material (HEM) oil and grease using USEPA 1664B.
5. All results are shown in micrograms per liter (ug/L), which is equivalent to parts per billion (ppb).
6. Data qualifiers are defined as follows:
 - < - Constituent not detected at a concentration above the reported detection limit.
 - J - Indicates that the associated numerical value is an estimated concentration.
7. Results have not been validated.

FIGURES





REFERENCE: BASE MAP USGS 7.5. MIN. TOPO. QUAD., LYONS & SAVANNAH, NY, 2016.

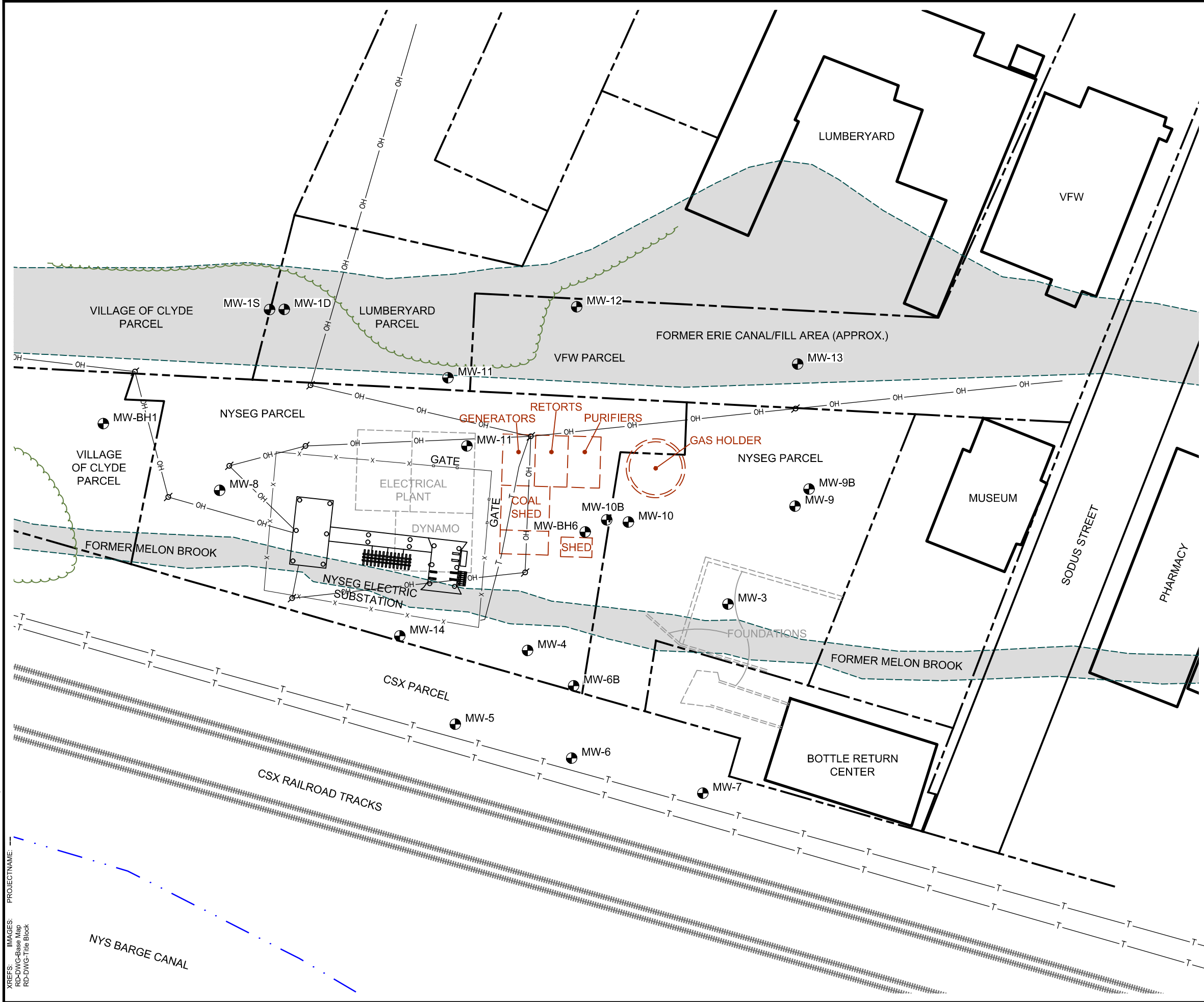


NYSEG
 CLYDE FORMER MANUFACTURED GAS PLANT SITE
 SITE NO. 8-59-019
REMEDIAL DESIGN

SITE LOCATION MAP

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: R. ALLEN E. KRAHMER PIC: J. BRIEN PW: J. GOLUBSKI TM: M. HYSELL TR: N. BEYRL Lyr: ON=OFF-REF (FRZ)
C:\Users\KraherOneDrive - ARCADIS\My 360 Docs\BERDOLA US\NYSEG CLYDE REMEDIAL DESIGN\2018\B01\3151.000001+DWG\01+RD-DWG\RD-DWG-Fig2-Site Map.dwg LAYOUT: 2 SAVED: 2/27/2018 8:53 AM ACADVER: 20.1S (LMS TECH) PAGES: 2 PLOTSTYLETABLE: PLT\FULLCTB PLOTTED: 2/27/2018 8:53 AM BY: KRAHMER, ERIC

PROJECTNAME: RD-DWG-Base Map
RD-DWG-Title Block

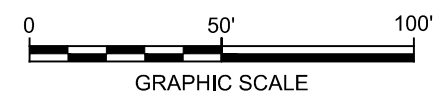


LEGEND:

- MONITORING WELL LOCATION
- PROPERTY LINE
- FORMER MGP STRUCTURES
- APPROXIMATE LOCATION OF FORMER BROOK/CANAL
- FENCE LINE
- UTILITY POLE
- OVERHEAD ELECTRIC
- UNDERGROUND COMMUNICATION

NOTES:

- ALL LOCATIONS ARE APPROXIMATE.
- BASE MAP REFERENCES: MAP SHOWING EXISTING CONDITIONS AT THE NYSEG CLYDE FORMER MANUFACTURED GAS PLANT - DRAWN BY THE ASSOCIATES LAND SURVEYORS AND DATED SEPTEMBER 7, 2011, REVISED ON APRIL 23, 2012. HORIZONTAL DATUM: NEW YORK STATE PLANE COORDINATE SYSTEM (EAST ZONE, NORTH AMERICAN DATUM (NAD83). VERTICAL DATUM: NORTH AMERICAN VERTICAL DATUM (NAVD 88).



NYSEG
CLYDE FORMER MANUFACTURED GAS PLANT SITE
SITE NO. 8-59-019
REMEDIAL DESIGN

SITE MAP

ARCADIS Design & Consultancy
for natural and
built assets

FIGURE
2

APPENDIX A

Design Drawings



CITY: SYRACUSE NY DIV/GROUP: ENVCAD DB: E. KRAHMER PM: JASON D. BREN TM: M. HYSSELL LVR/OPTION*: OFF=REF*
 3620219.8:31 AM BY: KRAHMER.ERIC
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DIG SAFELY NEW YORK
1-800-962-7962 or 811

NYSEG (ELECTRIC AND GAS UTILITIES)
1-800-572-1131

SPECTRUM (TELEPHONE UTILITY)
1-877-636-3278 (TECHNICAL SUPPORT)

VERIZON (TELEPHONE UTILITY)
1-855-661-6323 (MAIN SWITCHBOARD)

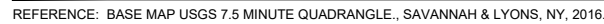
VILLAGE OF CLYDE DEPARTMENT OF PUBLIC WORKS
315-923-7821

VILLAGE OF CLYDE POLICE DEPARTMENT
315-923-5051

VILLAGE OF CLYDE FIRE DEPARTMENT
315-923-7667

NEWARK-WAYNE COMMUNITY HOSPITAL
315-332-2022

IN CASE OF EMERGENCY CALL 911



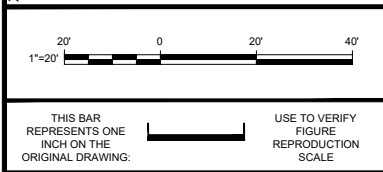
DATE ISSUED
MAY 2019



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NEW YORK STATE EDUCATION LAW

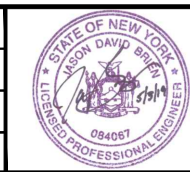
GENERAL

| | |
|--------------|--|
| G-001 | GENERAL NOTES, ABBREVIATIONS, AND LEGEND |
| G-101 | EXISTING CONDITIONS PLAN |
| G-102 | PRE-CONSTRUCTION UTILITY RELOCATION PLAN |
| CIVIL | |
| C-101 | SITE PREPARATION PLAN |
| C-102 | EXCAVATION AND SHORING PLAN |
| C-103 | FINAL GRADING AND RESTORATION PLAN |
| C-201 | EXCAVATION AND SHORING PROFILE |
| C-301 | EXCAVATION AND SHORING CROSS SECTIONS |
| C-401 | TEMPORARY WATER TREATMENT SYSTEM PIPING AND INSTRUMENTATION DIAGRAM |
| C-501 | SITE PREPARATION DETAILS |
| C-502 | EROSION AND SEDIMENT CONTROL DETAILS |
| C-503 | EXCAVATION SUPPORT DETAILS AND NOTES |
| C-504 | MISCELLANEOUS DETAILS |
| C-505 | MISCELLANEOUS DETAILS |



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| No. | Date | | Revisions | By | Ck |
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| | | |
|---|-------------------------|--------------------|
| Professional Engineer's Name JASON D. BRIEN | | |
| Professional Engineer's No. 084067 | | |
| State NY | Date Signed 5/3/2019 | Project Mgr. BA |
| Designed by MH | Drawn by EK | Checked by JB |



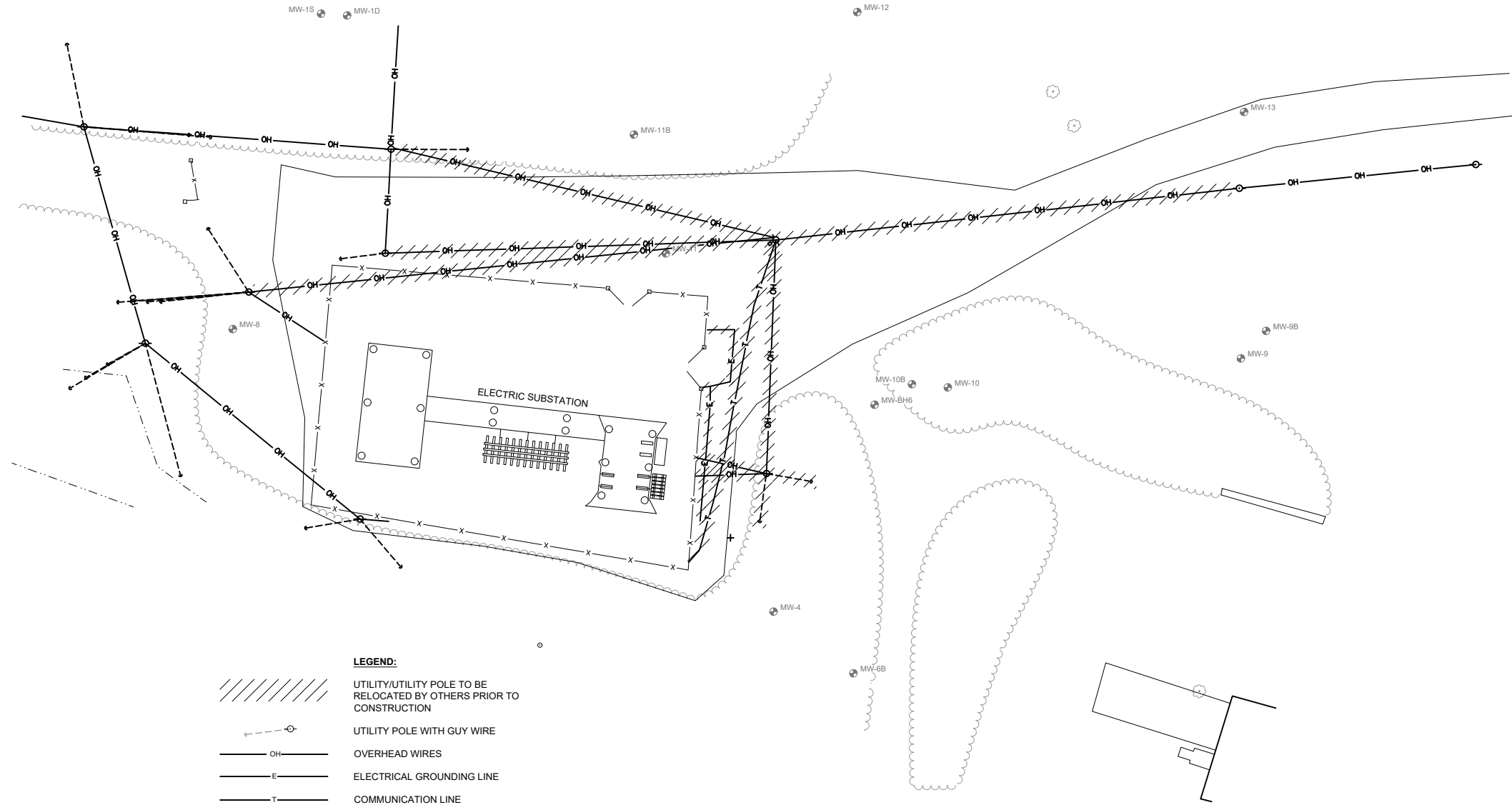
NYSEG • CLYDE - FORMER MGP SITE, CLYDE, NEW YORK
FINAL REMEDIAL DESIGN REPORT

EXISTING CONDITIONS PLAN

| |
|---|
| ARCADIS Project No. B0013151.0000.00004 |
| Date MAY 2019 |
| ARCADIS ONE LINCOLN CENTER 110 W FAYETTE ST, SUITE 300 SYRACUSE, NEW YORK TEL. 315.446.9120 |

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DR: E. KRAHMER LD: PIC: J. BRIEN PM: J. BRIEN TM: M. HYSELL LYRONE="OFF"=REF*
C:\BIM\OneDrive - ARCADIS\BIM 360 Docs\ANA - IBERDROLA USA\NYSEG CLYDE REMEDIAL DESIGN\2019\B0013151.000001-DWG\RD-G-102-Relocation Plan.dwg LAYOUT: G-102 SAVED: 5/22/2019 8:13 AM ACADVER: 21.0S (LMS TECH) PAGES: 1 OF 1 PLOTSTYLE: TABLE.PLT CONT: CTB
PLOTTED: 5/6/2019 8:35 AM BY: KRAHMER, ERIC

REFS: IMAGES:
X-Base Map PIERY-C1060765.png
X-Utility Block
X-Utility
X-Sample Loc-20
X-Vegetation



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| | | <table><tr><td>No.</td><td>Date</td><td>Revisions</td><td>By</td><td>Ckd</td></tr><tr><td> </td><td> </td><td> </td><td> </td><td> </td></tr></table> | | No. | Date | Revisions | By | Ckd | | | | | | <table><tr><td colspan="3">Professional Engineer's Name JASON D. BRIEN</td></tr><tr><td colspan="3">Professional Engineer's No. 084067</td></tr><tr><td>State NY</td><td>Date Signed 5/3/2019</td><td>Project Mgr. BA</td></tr><tr><td>Designed by MH</td><td>Drawn by EK</td><td>Checked by JB</td></tr></table> | | Professional Engineer's Name JASON D. BRIEN | | | Professional Engineer's No. 084067 | | | State NY | Date Signed 5/3/2019 | Project Mgr. BA | Designed by MH | Drawn by EK | Checked by JB | | | | | NYSEG • CLYDE - FORMER MGP SITE, CLYDE, NEW YORK FINAL REMEDIAL DESIGN REPORT | | ARCADIS Project No. B0013151.0000.00004 | | G-102 |
| No. | Date | Revisions | By | Ckd | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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| Professional Engineer's Name JASON D. BRIEN | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Professional Engineer's No. 084067 | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| State NY | Date Signed 5/3/2019 | Project Mgr. BA | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
| Designed by MH | Drawn by EK | Checked by JB | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | | |
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X-Base Block
X-Contour
X-Util Post
X-Sample Loc-20
X-Vegetation



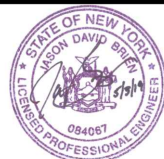
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USE TO VERIFY FIGURE REPRODUCTION SCALE

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| No. | Date | Revisions | By | Ckd |
|-----|------|-----------|----|-----|
| | | | | |
| | | | | |
| | | | | |

Professional Engineer's Name
JASON D. BRIEN
Professional Engineer's No.
084067
State
NY
Date Signed
5/3/2019
Project Mgr.
BA
Designed by
MH
Drawn by
EK
Checked by
JB



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FINAL REMEDIAL DESIGN REPORT

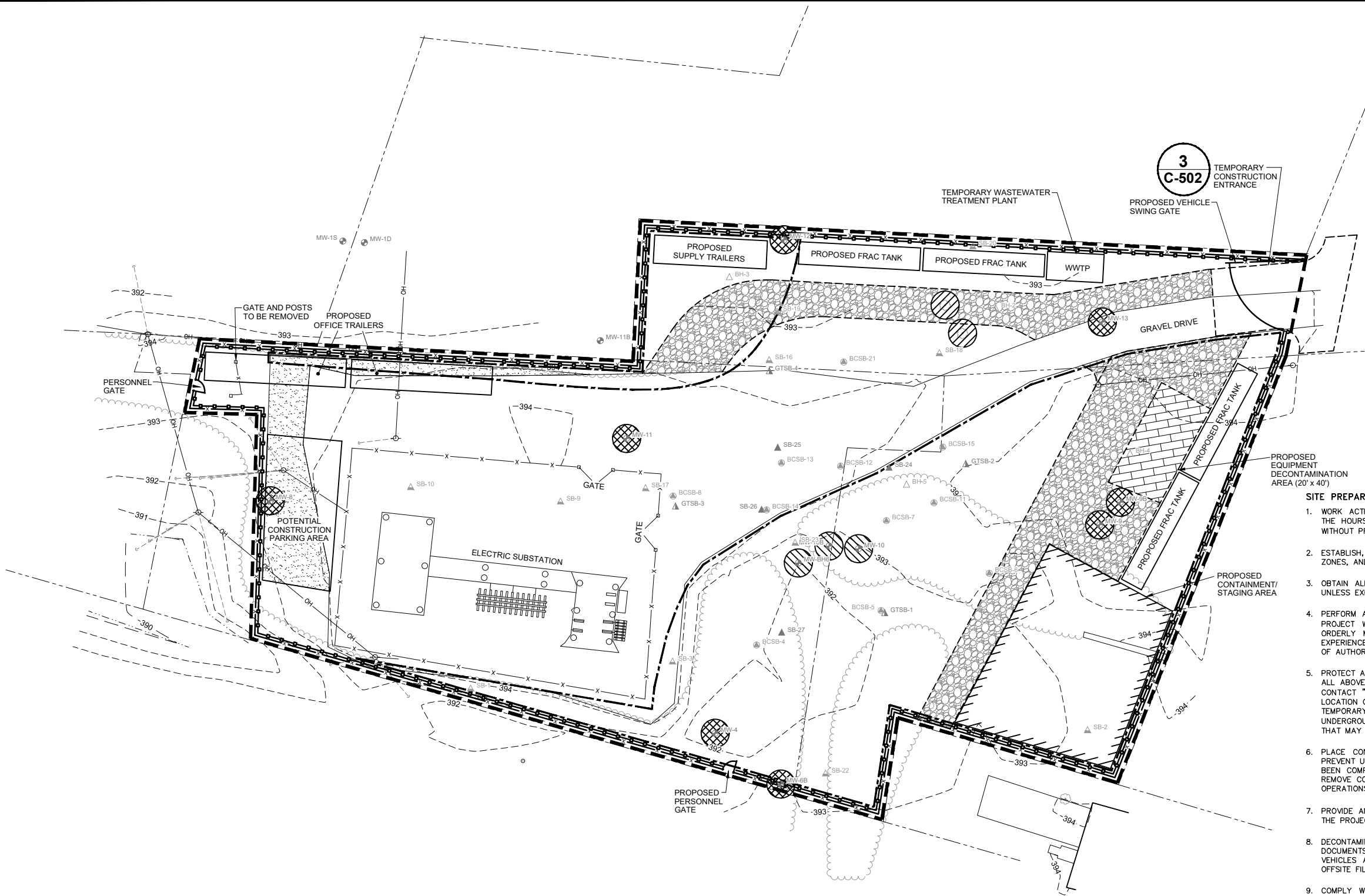
SITE PREPARATION PLAN

ARCADIS Project No.
B0013151.0000.00004

Date
MAY 2019

ARCADIS
ONE LINCOLN CENTER
110 W FAYETTE ST, SUITE 300
SYRACUSE, NEW YORK
TEL: 315.446.9120

C-101



LEGEND:

- EXISTING TREE TO BE REMOVED/DISPOSED OF BY REMEDIATION CONTRACTOR
- EXISTING WELL TO BE DECOMMISSIONED BY REMEDIATION ENGINEER (SEE NOTE 12)
- TEMPORARY ACCESS ROAD
- PROPOSED SUPPORT AREA GRAVEL COVER
- PROPOSED EQUIPMENT DECONTAMINATION AREA
- APPROXIMATE LIMITS OF CLEARING AND GRUBBING
- PROJECT WORK LIMITS
- EXISTING WELL TO BE PROTECTED
- PROPOSED TEMPORARY SECURITY FENCE
- PROPOSED EROSION AND SEDIMENTATION CONTROLS
- PROPOSED CONTAINMENT/STAGING AREA
- PROPOSED PERSONNEL GATE

3 C-502 TEMPORARY CONSTRUCTION ENTRANCE

2 C-501

3 C-501

4 C-501

SITE PREPARATION:

- WORK ACTIVITIES ARE PERMITTED ON NON-HOLIDAY WEEKDAYS (MONDAY THROUGH FRIDAY) BETWEEN THE HOURS OF 7:00 AM AND 6:00 PM. NO WORK SHALL BE PERFORMED OUTSIDE OF THESE HOURS WITHOUT PRIOR APPROVAL FROM NYSEG AND/OR REMEDIATION ENGINEER.
- ESTABLISH, MAINTAIN, AND PROTECT THE PROJECT LIMITS, INCLUDING SUPPORT ZONES, EXCLUSION ZONES, AND CONTAMINATION REDUCTION ZONES.
- OBTAIN ALL FEDERAL, STATE, AND LOCAL PERMITS THAT MAY BE REQUIRED TO PERFORM THE WORK UNLESS EXPLICITLY STATED OTHERWISE IN THE CONTRACT DOCUMENTS.
- PERFORM ALL WORK WITHIN THE PROJECT WORK LIMITS. NO WORK SHALL BE PERFORMED BEYOND THE PROJECT WORK LIMITS WITHOUT NYSEG'S PRIOR APPROVAL. PERFORM ALL WORK IN A NEAT AND ORDERLY MANNER, IN CONFORMANCE WITH BEST MODERN TRADE PRACTICE, AND BY COMPETENT, EXPERIENCED PERSONNEL. MATERIALS AND INSTALL IN ACCORDANCE WITH ALL LAWS AND REGULATIONS OF AUTHORITIES HAVING JURISDICTION.
- PROTECT ABOVE GROUND AND UNDERGROUND UTILITIES DURING CONSTRUCTION. VERIFY THE LOCATION OF ALL ABOVE GROUND AND UNDERGROUND UTILITIES IN THE FIELD PRIOR TO COMMENCING CONSTRUCTION. CONTACT "DIG SAFELY NEW YORK" (1-800-962-7962) AND ALL APPLICABLE UTILITY COMPANIES FOR LOCATION OF UNDERGROUND UTILITIES. COORDINATE WITH THE APPROPRIATE UTILITY COMPANIES FOR THE TEMPORARY REMOVAL, RELOCATION, AND REPLACEMENT OF ANY UTILITY POLES, GUY WIRES, UNDERGROUND UTILITIES, AND/OR OVERHEAD WIRES THAT FALL WITHIN THE LIMITS OF CONSTRUCTION, OR THAT MAY INTERFERE WITH THE WORK.
- PLACE CONSTRUCTION FENCING AROUND ACCESSIBLE PORTIONS OF THE PROJECT WORK LIMITS TO PREVENT UNAUTHORIZED ACCESS. DO NOT REMOVE CONSTRUCTION FENCING UNTIL WORK ACTIVITIES HAVE BEEN COMPLETED WITHIN THE ACTIVE WORK LIMITS AND THE GROUND SURFACE HAS BEEN RESTORED. REMOVE CONSTRUCTION FENCING FOLLOWING SURFACE RESTORATION TO MINIMIZE DISRUPTION TO ONSITE OPERATIONS, TO THE EXTENT PRACTICABLE.
- PROVIDE AND MAINTAIN SITE SECURITY TO PREVENT UNAUTHORIZED ENTRY OF PERSONS/VEHICLES INTO THE PROJECT WORK LIMITS.
- DECONTAMINATE CONSTRUCTION VEHICLES AND EQUIPMENT IN ACCORDANCE WITH THE CONTRACT DOCUMENTS BEFORE ARRIVING ONSITE AND BEFORE LEAVING THE SITE. APPROPRIATELY DECONTAMINATE VEHICLES AND EQUIPMENT THAT COME IN CONTACT WITH CONTAMINATED MATERIAL BEFORE HANDLING OFFSITE FILL MATERIALS OR ONSITE RE-USE MATERIALS.
- COMPLY WITH ALL NOISE ORDINANCES AND MAKE EVERY EFFORT TO MINIMIZE NOISE CAUSED BY CONSTRUCTION OPERATIONS. EQUIPMENT SHALL BE EQUIPPED WITH SILENCERS OR MUFFLERS DESIGNED TO OPERATE WITH THE LEAST POSSIBLE NOISE IN COMPLIANCE WITH LAWS AND REGULATIONS.
- PROVIDE MEANS, METHODS, AND FACILITIES REQUIRED TO CONTROL MGP-RELATED ODORS, VAPORS, AND DUST GENERATED DURING THE WORK. COMPLY WITH ODOR, VAPOR, AND DUST CONTROL REQUIREMENTS OF SPECIFICATION SECTION 01 57 05 - TEMPORARY CONTROLS.
- PERFORM COMMUNITY AIR MONITORING ON A CONTINUOUS BASIS DURING ALL GROUND-INTRUSIVE WORK OR DUST-GENERATING WORK, AND COMPLY WITH SPECIFICATION SECTION 01 35 49 - COMMUNITY AIR MONITORING PLAN.
- ALL MONITORING WELLS INDICATED AS TO BE DECOMMISSIONED SHALL BE DECOMMISSIONED BY REMEDIATION ENGINEER PRIOR TO EXCAVATION. REMEDIATION CONTRACTOR TO REMOVE REMAINING MONITORING WELLS AND ASSOCIATED SURFACE COMPLETIONS WITHIN THE SOIL REMOVAL AREA DURING SOIL EXCAVATION.

CITY: SYRACUSE NY DIV/GROUP: ENVCAD DR: E. KRAHMER LD: PIC: J. BRIEN PM: J. BRIEN TM: M. HYSELL LYRONE: OFF=REF*
C:\BIM\OneDrive - ARCADIS\BIM 360 Docs\ANA - IBERDROLA USAINYSEG CLYDE REMEDIAL DESIGN\2019\B0013151.000001-DWG\RD-C-102-Excavation Site Plan.dwg LAYOUT: C-102
PLOTTED: 5/6/2019 8:38 AM BY: KRAHMER, ERIC

NOTES:

- SEE DRAWING G-001 FOR ADDITIONAL NOTES, ABBREVIATIONS, AND LEGEND.
- SEE DRAWING C-503 FOR EXCAVATION SUPPORT DETAILS AND NOTES.
- CONDUCT EXCAVATION IN ACCORDANCE WITH THE MOST RECENT VERSION OF OSHA 29CFR1926, SUBPART P: EXCAVATIONS.
- GAS HOLDER LOCATION IS APPROXIMATE. ADDITIONAL SUBSURFACE STRUCTURES (NOT SHOWN) MAY BE PRESENT WITHIN EXCAVATION AREA AND WILL REQUIRE REMOVAL.
- PROPOSED EXCAVATION ELEVATIONS ARE BASED ON THE ANTICIPATED TOP OF BEDROCK ELEVATION. FINAL EXCAVATION ELEVATIONS MAY VARY BASED ON THE OBSERVED TOP OF WEATHERED BEDROCK DURING CONSTRUCTION.

- LEGEND:
- PROPOSED SURFACE SOIL EXCAVATION AREA (1 FOOT BGS)
 - HYDRAULIC BARRIER WALL
 - SOLDIER PILE
 - LAGGING
 - PROPOSED BASE OF EXCAVATION CONTOURS (SEE NOTES 4 AND 5)
 - CONTROL POINT
 - SETTLEMENT MONITORING LOCATION
 - TILTMETER LOCATION
 - VIBRATION MONITORING LOCATION

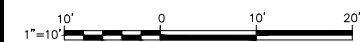
| EXCAVATION SUPPORT TABLE | | | | | | |
|--------------------------|-------------------------------|------------------------|-----------------|--|------------|---|
| SECTION NUMBER | APPROX. ALIGNMENT LENGTH (FT) | MAX. PILE SPACING (FT) | NUMBER OF PILES | MIN. EMBEDMENT BELOW BASE OF EXCAVATION (FT) | PILE SHAPE | MIN. STEEL PLATE LAGGING THICKNESS (IN) |
| 1 | 74 | 6 | 12 | 17.5 | W27x161 | 1 |
| 2 | 21 | 7 | 4 | 19.5 | W27x146 | 1-1/8 |
| 3 | 70 | 10 | 7 | 19.0 | W27x146 | 1-5/8 |
| 4 | 145 | 10 | 15 | 16.0 | W27x146 | 1-5/8 |
| 5 | 48 | 7 | 7 | 21.5 | W27x146 | 1-1/8 |

LAGGING NOTE:

- WITH THE REMEDIATION ENGINEERS APPROVAL, STEEL PLATE LAGGING MAY BE SUBSTITUTED BY TIMBER LAGGING. TIMBER LAGGING SHALL BE 5" THICK (MIN) FOR PILE SPACINGS OF 10 FEET. LAGGING SHALL BE 3" THICK (MIN) FOR ALL OTHER SOLDIER PILE.

| DEEP EXCAVATION CONTROL POINTS | | |
|--------------------------------|-------------|--------------|
| ID | Easting (X) | Northing (Y) |
| CP101 | 742713.09 | 1123345.71 |
| CP102 | 742736.23 | 1123356.06 |
| CP103 | 742805.93 | 1123352.42 |
| CP104 | 742802.41 | 1123274.30 |
| CP105 | 742734.02 | 1123260.50 |
| CP106 | 742706.56 | 1123254.97 |

| SHALLOW EXCAVATION CONTROL POINTS | | |
|-----------------------------------|-------------|--------------|
| ID | Easting (X) | Northing (Y) |
| CP201 | 742861.68 | 1123353.52 |
| CP202 | 742834.38 | 1123252.58 |
| CP203 | 742787.13 | 1123234.50 |
| CP204 | 742781.63 | 1123199.29 |
| CP205 | 742587.15 | 1123255.06 |
| CP206 | 742587.63 | 1123260.52 |
| CP207 | 742698.07 | 1123241.45 |
| CP208 | 742703.88 | 1123322.27 |
| CP209 | 742659.60 | 1123325.97 |
| CP210 | 742659.37 | 1123350.77 |
| CP211 | 742679.53 | 1123363.02 |

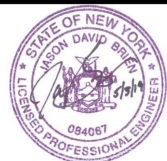


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Professional Engineer's Name
JASON D. BRIEN
Professional Engineer's No.
084067
State
NY
Date Signed
5/3/2019
Project Mgr.
BA
Designed by
MH
Drawn by
EK
Checked by
JB



ARCADIS Design & Consultancy for natural and built assets

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FINAL REMEDIAL DESIGN REPORT

EXCAVATION AND SHORING PLAN

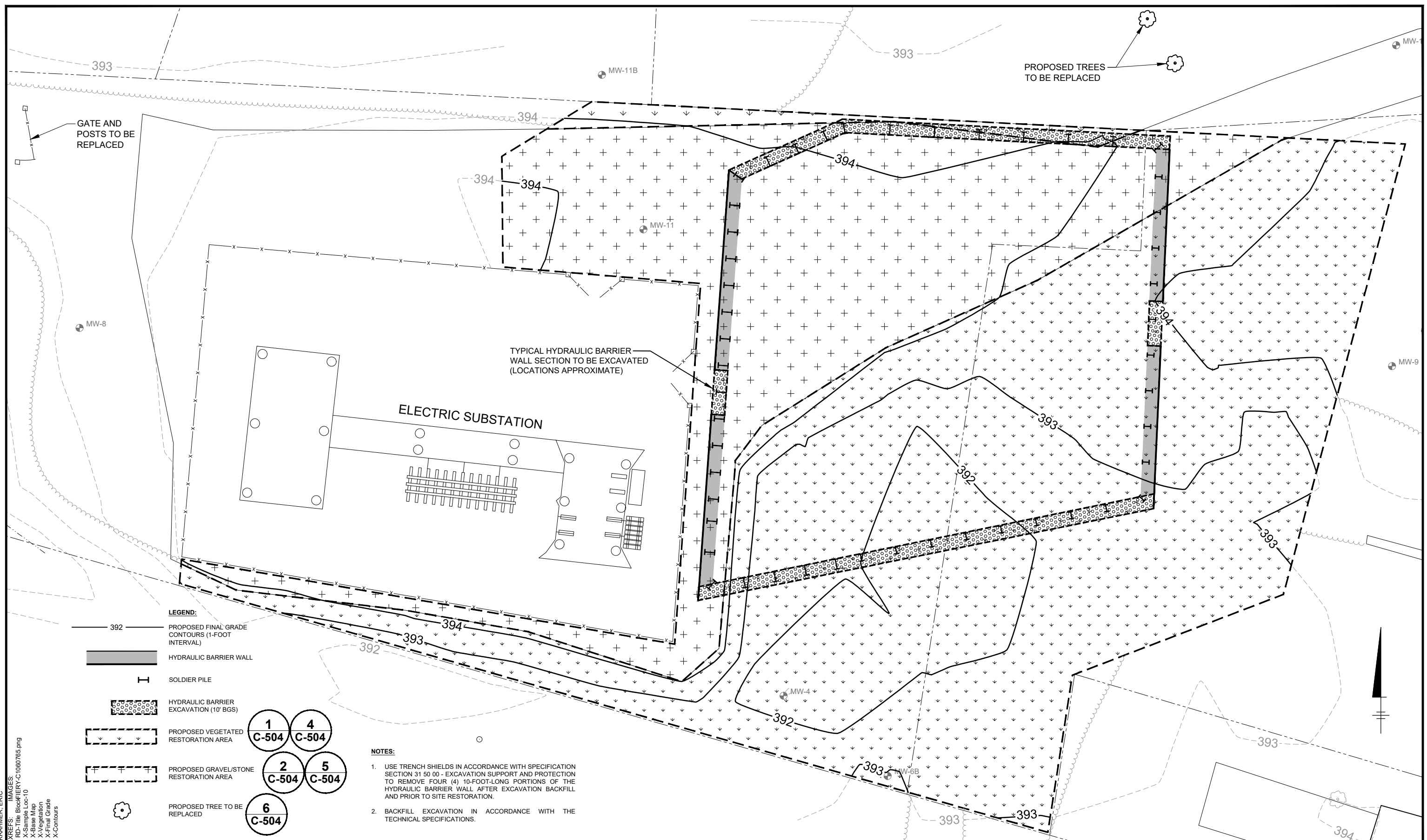
ARCADIS Project No.
B0013151.0000.00004

Date
MAY 2019

ARCADIS
ONE LINCOLN CENTER
110 W FAYETTE ST, SUITE 300
SYRACUSE, NEW YORK
TEL: 315.446.9120

C-102

CITY: SYRACUSE NY DIV/GRP: ENVCAD DE: E. KRAHMER LD: PIC: J. BRIEN PM: J. BRIEN TM: M. HYSELL LYRONE=OFF=REF*
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1"=10'

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| No. | Date | Revisions | By | Ckd |
| | | | | |

Professional Engineer's Name
JASON D. BRIEN

Professional Engineer's No.
084067

State
NY

Date Signed
5/3/2019

Project Mgr.
BA

Designed by
MH

Drawn by
EK

Checked by
JB

ARCADIS

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FINAL REMEDIAL DESIGN REPORT

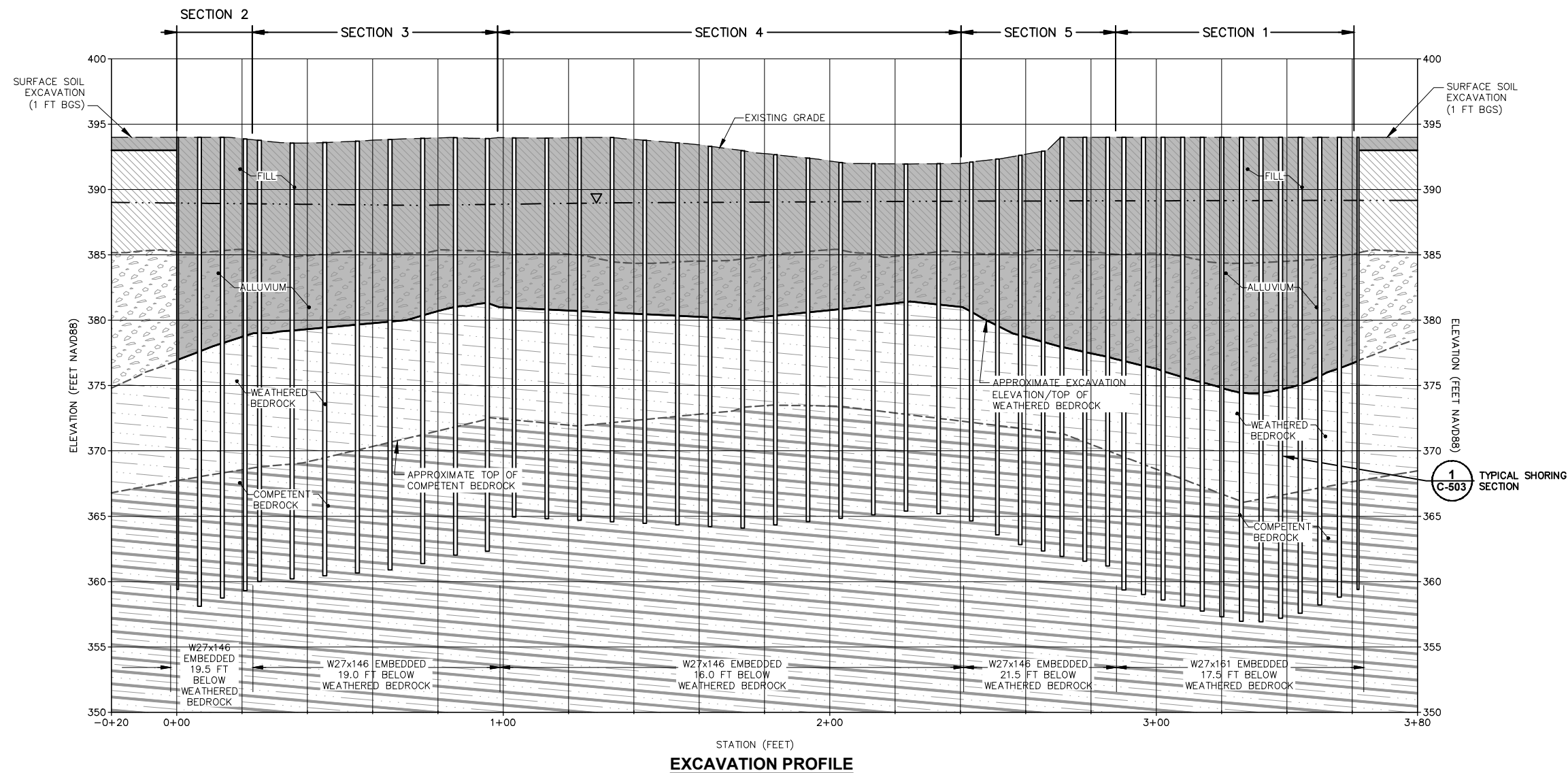
FINAL GRADING AND RESTORATION PLAN

ARCADIS Project No.
B0013151.0000.00004

Date
MAY 2019

ARCADIS
ONE LINCOLN CENTER
110 W FAYETTE ST, SUITE 300
SYRACUSE, NEW YORK
TEL. 315.446.9120









C-103

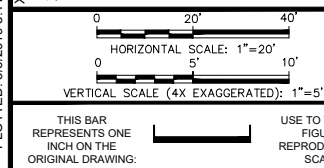


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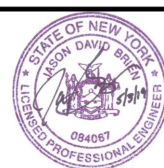
1. SEE DRAWING G-001 FOR ADDITIONAL NOTES, ABBREVIATIONS, AND LEGEND.
2. REFER TO EXCAVATION SUPPORT TABLE ON C-102 FOR ALL SOLDIER PILE LENGTHS, EMBEDMENTS, SOLDIER PILE SHAPES, AND LAGGING THICKNESSES.
3. HORIZONTAL SCALE ON SECTIONS REPRESENTS STATIONING IN FEET. VERTICAL SCALE ON SECTIONS REPRESENTS ELEVATIONS IN FEET.
4. SOIL TYPES, CONTACT LOCATIONS, GROUNDWATER SURFACE, AND APPROXIMATE DEPTHS WERE IDENTIFIED DURING SITE INVESTIGATIONS AND HAVE BEEN INTERPOLATED BETWEEN EXPLORATION LOCATIONS. ACTUAL SUBSURFACE CONDITIONS ENCOUNTERED DURING THE WORK MAY BE DIFFERENT THAN THOSE SHOWN.

LEGEND:

- | | |
|---|-------------------------------|
|  | EXCAVATION AREA |
|  | EXISTING SURFACE TOPOGRAPHY |
|  | APPROXIMATE GROUNDWATER LEVEL |
|  | PROPOSED EXCAVATION DEPTH |
|  | FILL |
|  | ALLUVIUM |
|  | WEATHERED BEDROCK |
|  | COMPETENT BEDROCK |

[illegible]

| | | |
|------------------------------|-------------|--------------|
| Professional Engineer's Name | | |
| JASON D. BRIEN | | |
| Professional Engineer's No. | | |
| 084067 | | |
| State | Date Signed | Project Mgr. |
| NY | 5/3/2019 | BA |
| Designed by | Drawn by | Checked by |
| MH | EK | JR |

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FINAL REMEDIAL DESIGN REPORT

EXCAVATION AND SHORING PROFILE

| |
|--|
| ARCADIS Project No. B0013151.0000.00004 |
| Date MAY 2019 |
| ARCADIS ONE LINCOLN CENTER 110 W FAYETTE ST, SUITE 200 SYRACUSE, NEW YORK 13202 TEL 315.446.9120 |

C-201

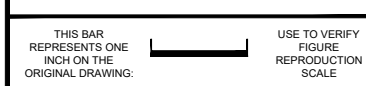


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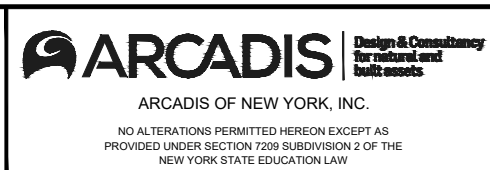


Member's Name: **BRIEN**

1. SEE DRAWING G-001 FOR ADDITIONAL NOTES, ABBREVIATIONS, AND LEGEND.
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3. HORIZONTAL SCALE ON SECTIONS REPRESENTS STATIONING IN FEET. VERTICAL SCALE ON SECTIONS REPRESENTS ELEVATIONS IN FEET.
4. SOIL TYPES, CONTACT LOCATIONS, GROUNDWATER SURFACE, AND APPROXIMATE DEPTHS WERE IDENTIFIED DURING SITE INVESTIGATIONS AND HAVE BEEN INTERPOLATED BETWEEN EXPLORATION LOCATIONS. ACTUAL SUBSURFACE CONDITIONS ENCOUNTERED DURING THE WORK MAY BE DIFFERENT THAN THOSE SHOWN.



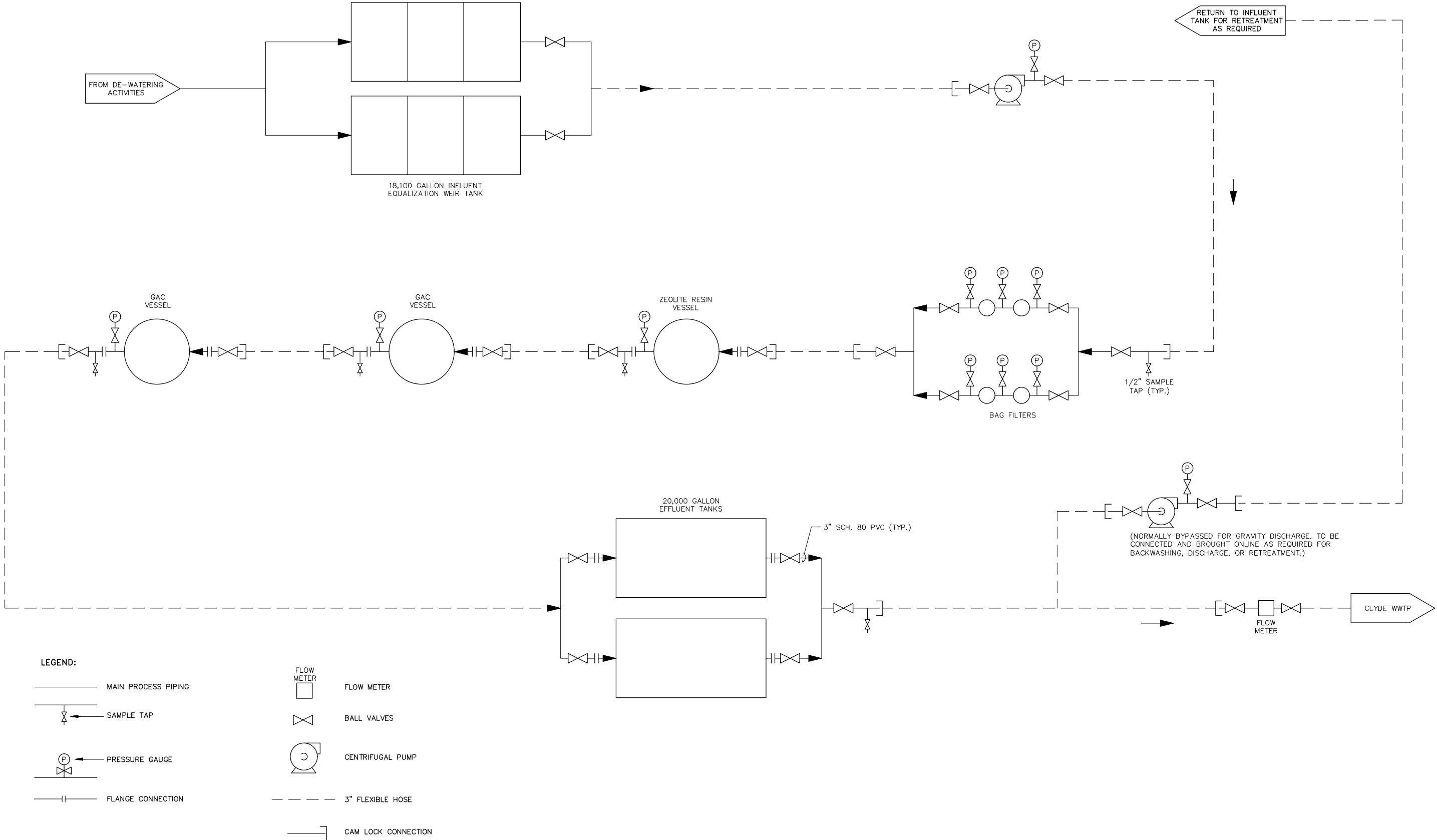
| | | |
|------------------------------|-------------|--------------|
| Professional Engineer's Name | | |
| JASON D. BRIEN | | |
| Professional Engineer's No. | | |
| 084067 | | |
| State | Date Signed | Project Mgr. |
| NY | 5/3/2019 | BA |
| Designed by | Drawn by | Checked by |
| MH | EK | JB |



| |
|---|
| ARCADIS Project No. B0013151.0000.00004 |
| Date MAY 2019 |
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C-301

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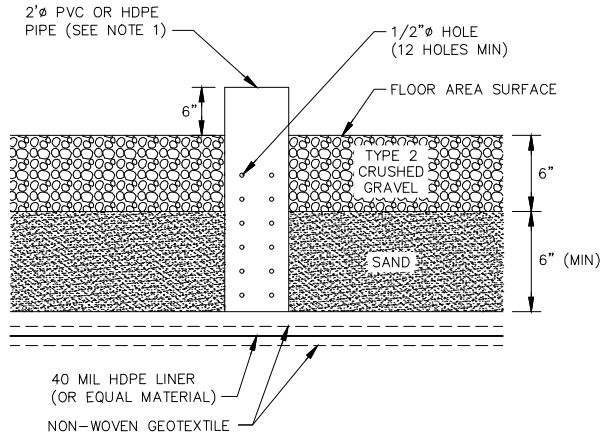


LEGEND:

- | | | | |
|--|---------------------|--|------------------|
| | MAIN PROCESS PIPING | | FLOW METER |
| | SAMPLE TAP | | BALL VALVES |
| | PRESSURE GAUGE | | CENTRIFUGAL PUMP |
| | FLANGE CONNECTION | | 3" FLEXIBLE HOSE |
| | CAM LOCK CONNECTION | | |

| | | | | | | | | | | | | | | | | | | | | | | | |
|---|--|--|--|---|--|--|--|---|--|--|--|--------------------|--------------|--|--|-----|--|--|--|--|--|--|--|
| <div>THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING.</div> <div>USE TO VERIFY FIGURE REPRODUCTION SCALE</div> | | | | Professional Engineer's Name JASON D. BRIEN | | | | ARCADIS OF NEW YORK, INC. NO ALTERATIONS PERMITTED HEREON EXCEPT AS PROVIDED UNDER SECTION 7209 SUBDIVISION 2 OF THE NEW YORK STATE EDUCATION LAW | NYSEG • CLYDE - FORMER MGP SITE, CLYDE, NEW YORK FINAL REMEDIAL DESIGN REPORT | | ARCADIS Project No. B0013151.0000.00004 | | C-401 | | | | | | | | | | |
| | | | | Professional Engineer's No. 084067 | | | | | | | Date MAY 2019 | | | | | | | | | | | | |
| | | | | State NY | | | | | Date Signed 5/3/2019 | | | Project Mgr. BA | | | | | | | | | | | |
| | | | | Designed by MH | | | | | Drawn by EK | | | Checked by JB | | | | | | | | | | | |
| No. | | | | Date | | | | Revisions | | | | By | | | | Ckd | | | | THIS DRAWING IS THE PROPERTY OF THE ARCADIS ENTITY IDENTIFIED IN THE TITLE BLOCK AND MAY NOT BE REUSED OR ALTERED IN WHOLE OR IN PART WITHOUT THE EXPRESS WRITTEN PERMISSION OF SAME | | | |

CITY: SYRACUSE NY DIV/GRP: ENVCAD DR: E. KRAHMER LD: PIC: J. BRIEN PM: J. BRIEN TM: M. HYSELL LYRONE: OFF=REF*
C:\BIM\OneDrive - ARCADIS\BIM 360 Docs\ANA - IBERDROLA USA\INSEG CLYDE REMEDIAL DESIGN\2019\B0013151.000001-DWG\RD-C-501-Site Prep Details.dwg LAYOUT: C-501
PLOT: 5/6/2019 8:42 AM BY: KRAHMER, ERIC
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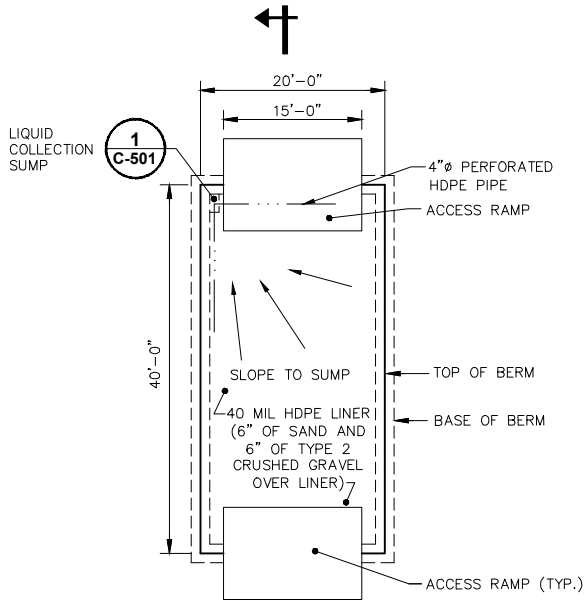
NOTE:

1. LIQUID COLLECTION SUMP TO CONSIST OF PERFORATED PVC OR HDPE PIPE INSTALLED VERTICALLY.

LIQUID COLLECTION SUMP

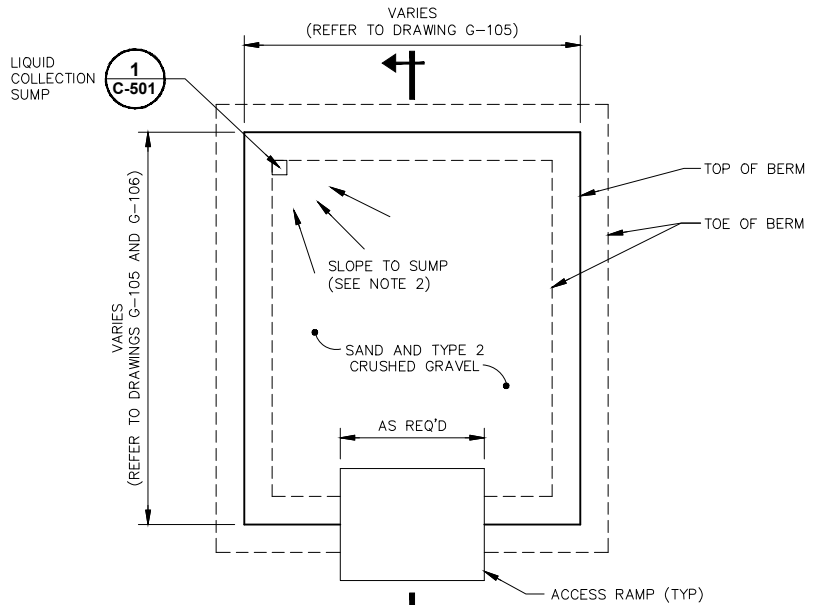
NOT TO SCALE

1



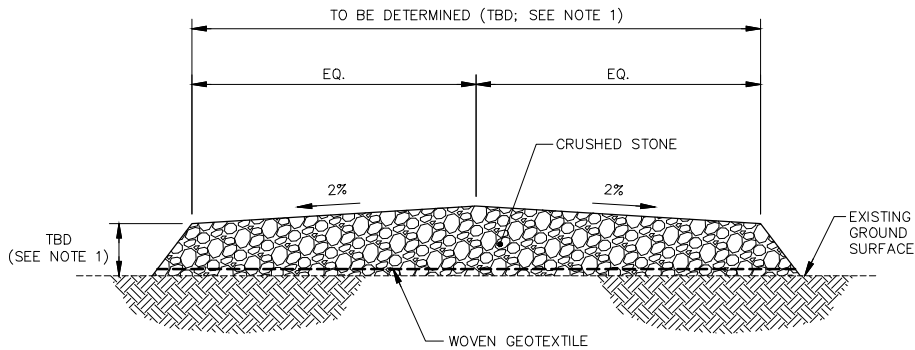
PLAN

PLAN



PLAN

PLAN



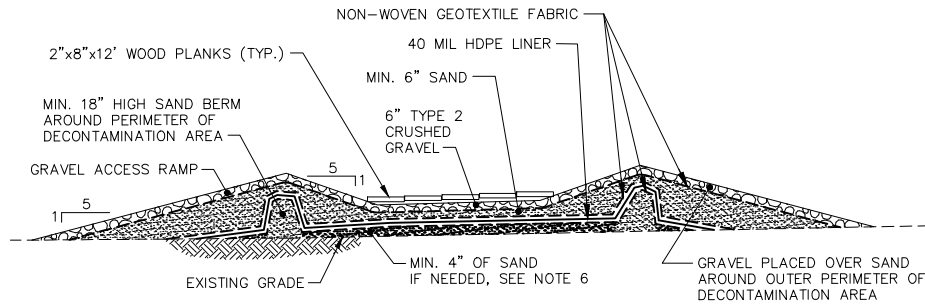
NOTE:

1. WIDTH AND THICKNESS OF TEMPORARY ACCESS ROAD SHALL BE DETERMINED PRIOR TO START OF CONSTRUCTION BASED ON ANTICIPATED VEHICLE LOADING, EXISTING GROUND CONDITIONS, AND ANTICIPATED DURATION OF USE.

TEMPORARY ACCESS ROAD

NOT TO SCALE

2



SECTION

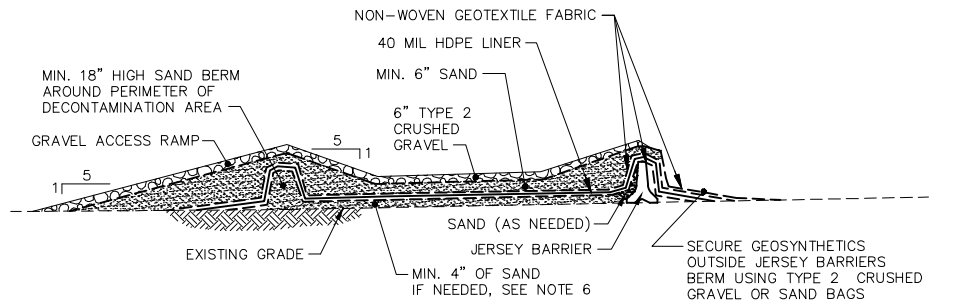
NOTES:

- SLOPE DECONTAMINATION AREA TOWARD A COLLECTION SUMP TO FACILITATE COLLECTION AND REMOVAL OF DECONTAMINATION LIQUIDS. PUMP LIQUIDS FROM COLLECTION SUMP TO FRAC TANK OR ON-SITE TEMPORARY WATER TREATMENT SYSTEM, AS DIRECTED BY REMEDIATION ENGINEER.
- PREPARE SUBGRADE TO BE UNIFORM AND FREE OF DELETERIOUS MATERIALS (E.G., SHARP STONES, WOODY DEBRIS, CONSTRUCTION DEBRIS) THAT COULD DAMAGE THE HDPE LINER. ADD ADDITIONAL MATERIAL (AS NECESSARY) TO STABILIZE AND GRADE THE GROUND SURFACE TO FACILITATE CONSTRUCTION OF THE DECONTAMINATION AREA.
- SUFFICIENTLY COMPACT SAND AND TYPE 2 CRUSHED GRAVEL TO PROVIDE A FIRM AND UNIFORM SURFACE. COMPACT MATERIAL (AS NECESSARY) IN A MANNER AND USING APPROPRIATE EQUIPMENT THAT AVOIDS DAMAGE TO THE GEOSYNTHETICS.
- REMOVE ALL DECONTAMINATION AREA MATERIALS FOR OFF-SITE DISPOSAL UPON COMPLETION OF THE CONSTRUCTION ACTIVITIES.
- PREFABRICATED STEEL PADS MAY BE USED IN LIEU OF CONSTRUCTION WOOD PLANKS.
- SAND CUSHIONING LAYER BETWEEN EXISTING GRADE AND BOTTOM NON-WOVEN GEOTEXTILE FABRIC MAY NOT BE REQUIRED IF CONSTRUCTED ON ASPHALT.
- REMEDATION CONTRACTOR MAY PROPOSE A PRE-FABRICATED METAL DECONTAMINATION AREA USED IN PLACE OF THIS DETAIL, WITH APPROVAL OF REMEDIATION ENGINEER.

PROPOSED EQUIPMENT DECONTAMINATION AREA

NOT TO SCALE

3



SECTION

NOTES:

- COVER MATERIALS WITHIN STAGING AREA WITH 10 MIL PLASTIC SHEETING AT ALL TIMES EXCEPT WHEN MATERIALS ARE BEING LOADED IN OR REMOVED FROM THE STAGING AREA. SECURE THE COVER TO RESIST WIND FORCES.
- SLOPE STAGING AREA TOWARD A COLLECTION SUMP TO FACILITATE COLLECTION AND REMOVAL OF LIQUIDS. PUMP LIQUIDS FROM COLLECTION SUMP TO FRAC TANK OR ON-SITE TEMPORARY WATER TREATMENT SYSTEM, AS DIRECTED BY REMEDIATION ENGINEER.
- PREPARE SUBGRADE TO BE UNIFORM AND FREE OF DELETERIOUS MATERIALS (E.G., SHARP STONES, WOODY DEBRIS, CONSTRUCTION DEBRIS) THAT COULD DAMAGE THE HDPE LINER. ADD ADDITIONAL MATERIAL (AS NECESSARY) TO STABILIZE AND GRADE THE GROUND SURFACE TO FACILITATE CONSTRUCTION OF THE STAGING AREA.
- SUFFICIENTLY COMPACT SAND AND TYPE 2 CRUSHED GRAVEL TO PROVIDE A FIRM AND UNIFORM SURFACE. COMPACT MATERIAL (AS NECESSARY) IN A MANNER AND USING APPROPRIATE EQUIPMENT THAT AVOIDS DAMAGE TO THE GEOSYNTHETICS.
- REMOVE ALL STAGING AREA MATERIALS FOR OFF-SITE DISPOSAL UPON COMPLETION OF THE CONSTRUCTION ACTIVITIES.
- SAND CUSHIONING LAYER BETWEEN EXISTING GRADE AND BOTTOM NON-WOVEN GEOTEXTILE FABRIC MAY NOT BE REQUIRED IF CONSTRUCTED ON ASPHALT.

PROPOSED CONTAINMENT / STAGING AREA

NOT TO SCALE

4

| | |
|---|---|
| NOT TO SCALE | |
| THIS BAR REPRESENTS ONE INCH ON THE ORIGINAL DRAWING. | USE TO VERIFY FIGURE REPRODUCTION SCALE |

| | |
|------------------------------|-------------|
| Professional Engineer's Name | |
| JASON D. BRIEN | |
| Professional Engineer's No. | |
| 084067 | |
| State | Date Signed |
| NY | 5/3/2019 |
| Project Mgr. | BA |
| Designed by | Drawn by |
| MH | EK |
| Checked by | JB |



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|---|--|
| NYSEG • CLYDE - FORMER MGP SITE, CLYDE, NEW YORK FINAL REMEDIAL DESIGN REPORT | |
| SITE PREPARATION DETAILS | |
| ARCADIS Project No. B0013151.0000.00004 | |
| Date MAY 2019 | |
| ARCADIS ONE LINCOLN CENTER 110 W FAYETTE ST, SUITE 300 SYRACUSE, NEW YORK TEL. 315.446.9120 | |
| C-501 | |

PROFILE

1

PLAN

PROFILE

3

NOT TO SCALE

SECTION

2

PLAN

SECTION

1. SOCK FABRIC SHALL MEET THE STANDARDS OF TABLE 1, THIS DRAWING. COMPOST SHALL MEET THE STANDARDS OF TABLE 2, THIS DRAWING.
2. COMPOST FILTER SOCK SHALL BE PLACED AT EXISTING LEVEL GRADE. BOTH ENDS OF THE SOCK SHALL BE EXTENDED AT LEAST 8 FEET UP SLOPE AT 45 DEGREES TO THE MAIN SOCK ALIGNMENT. MAXIMUM SLOPE LENGTH ABOVE ANY SOCK SHALL NOT EXCEED THAT SHOWN ON TABLE 3, THIS DRAWING. STAKES MAY BE INSTALLED IMMEDIATELY DOWNSLOPE OF THE SOCK IF SO SPECIFIED BY THE MANUFACTURER.
3. A MINIMUM OF 12 INCH DIAMETER SOCKS ARE TO BE USED. THE FLAT DIMENSION OF THE SOCK SHALL BE AT LEAST 1.5 TIMES THE NOMINAL DIAMETER.
4. TRAFFIC SHALL NOT BE PERMITTED TO CROSS FILTER SOCKS.
5. ACCUMULATED SEDIMENT SHALL BE REMOVED WHEN IT REACHES HALF THE ABOVEGROUND HEIGHT OF THE SOCK AND DISPOSED IN THE MANNER DESCRIBED ELSEWHERE IN THE PLAN.
6. SOCKS SHALL BE INSPECTED WEEKLY AND AFTER EACH RUNOFF EVENT. DAMAGED SOCKS SHALL BE REPAIRED ACCORDING TO MANUFACTURER'S SPECIFICATIONS OR REPLACED WITHIN 24 HOURS OF INSPECTION.
7. BIODEGRADABLE FILTER SOCKS SHALL BE REPLACED AFTER 6 MONTHS; PHOTODEGRADABLE SOCKS AFTER 1 YEAR. POLYPROPYLENE SOCKS SHALL BE REPLACED ACCORDING TO MANUFACTURER'S RECOMMENDATIONS.
8. UPON STABILIZATION OF THE AREA TRIBUTARY TO THE SOCK, STAKES SHALL BE REMOVED. THE SOCK MAY BE LEFT IN PLACE AND VEGETATED OR REMOVED. IN THE LATTER CASE, THE MESH SHALL BE CUT OPEN AND THE MULCH SPREAD AS A SOIL SUPPLEMENT.

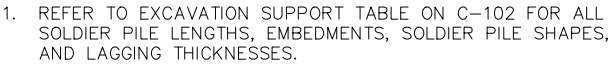


Diagram illustrating the components of a soldier pile wall cross-section:

- EXCAVATION ALIGNMENT
- STEEL PLATE LAGGING OR APPROVED ALTERNATIVE
- CONTROL POINT
- HYDRAULIC BARRIER WALL
- SOLDIER PILE
- BORE HOLE (36"Ø)
- RETAINED SOIL

A cross-sectional diagram showing a borehole and a hydraulic barrier wall. The borehole is a vertical shaft with a diameter of 36 inches, indicated by a dashed line and the label "LIMITS OF BORE HOLE (36\"

Diagram illustrating a bore hole in a hydraulic barrier wall. The wall is shown as a gray vertical structure. A circular bore hole is located within the wall. The diameter of the bore hole is labeled as 36" (36" Ø). The depth of the bore hole is indicated as 3-FT (MIN.). The distance from the top of the bore hole to the top of the wall is labeled as 9". The distance from the bottom of the bore hole to the bottom of the wall is labeled as 6" MIN. The wall is labeled as "HYDRAULIC BARRIER WALL". The area above the wall is labeled as "LIMITS OF EXCAVATION".

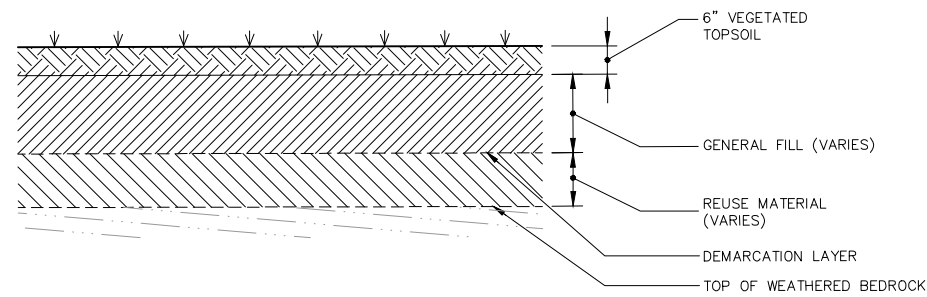
1. THE PURPOSE OF EXCAVATION IS TO REMOVE CONTAMINATED SOIL WITHIN SPECIFIED LIMITS AND BACKFILL WITH CLEAN SOIL.
2. THE REMEDIATION CONTRACTOR IS RESPONSIBLE FOR PROVIDING SAFE AND ADEQUATE VEHICLE/EQUIPMENT ACCESS AND EGRESS TO EXCAVATION AREAS TO FACILITATE THE EXCAVATION OF MATERIALS TO THE HORIZONTAL AND VERTICAL LIMITS INDICATED ON THE DRAWING.
3. REPAIR OR REPLACE EXISTING SITE FEATURES THAT ARE DAMAGED OR DESTROYED (OTHER THAN THOSE FEATURES SPECIFICALLY INDICATED ON THESE DRAWINGS AS TO BE REMOVED OR ALTERED) BY THE REMEDIATION CONTRACTOR DURING THE WORK TO THE SATISFACTION OF NYSEG.
4. ACTUAL SITE FEATURES AT THE TIME OF CONSTRUCTION MAY DIFFER FROM THOSE SHOWN ON THE DRAWINGS. PROMPTLY NOTIFY NYSEG AND THE REMEDIATION ENGINEER (IN WRITING) OF ANY SUCH DIFFERENCES THAT MAY AFFECT THE PERFORMANCE OF THE WORK.
5. VERIFY ALL DIMENSIONS AND LOCATIONS OF NEW CONSTRUCTION AND EXISTING SITE FEATURES.

1. SHORING FOR THE EXCAVATIONS WILL CONSIST OF CANTILEVERED STEEL SOLDIER PILES AND STEEL PLATE LAGGING OR ALTERNATE PROPOSED BY THE REMEDIATION CONTRACTOR AND APPROVED BY THE REMEDIATION ENGINEER.
2. THE SHORING ALIGNMENT SHALL BE PRE-TRENCHED 3 FEET BELOW GROUND SURFACE TO REMOVE OBSTRUCTION AND ALLOW FOR SWELLING DURING CONSTRUCTION OF THE HYDRAULIC WALL.
3. THE HYDRAULIC BARRIER WALL SHALL BE INSTALLED IN THE TRENCH BY MIXING SOIL, IN-SITU, WITH BENTONITE AND PORTLAND CEMENT TO THE TOP OF THE WEATHERED BEDROCK.
4. ALLOW A MINIMUM OF 72 HOURS FOR THE HYDRAULIC BARRIER WALL TO CURE PRIOR TO INITIATING DRILLING AND INSTALLATION OF THE SOLDIER PILES.
5. DRILL SOLDIER PILE BORE HOLES TO THE DESIGN DEPTHS INDICATED ON THE DRAWINGS AND ALLOW THE REMEDIATION ENGINEER TO SOUND EACH HOLE PRIOR TO SOLDIER PILE INSTALLATION. HOLE DIAMETERS SHALL BE DRILLED SUCH THAT THERE ARE 3 INCHES OF CLEARANCE AROUND THE SOLDIER PILES.
6. LOWER THE SOLDIER PILE INTO THE HOLE AND BACKFILL WITH CONCRETE TO THE TOP OF WEATHERED BEDROCK. BACKFILL HOLES FROM WEATHERED BEDROCK TO THE EXISTING GROUND SURFACE USING CLSM.
7. ALLOW A MINIMUM OF 24 HOURS PRIOR TO DRILLING ADJACENT HOLES TO ALLOW THE CONCRETE AND CLSM TO SET.
8. INSTALL PLATE LAGGING BETWEEN SOLDIER PILES TO THE TOP OF WEATHERED BEDROCK AGAINST THE INSIDE WEB ON THE EXCAVATION SIDE OF THE SHORING.
9. AFTER EXCAVATION TO WEATHERED BEDROCK, REMEDIATION CONTRACTOR SHALL BACKFILL TO APPROXIMATELY 3 FEET BGS AND REMOVE LAGGING. SOLDIER PILES SHALL BE CUT APPROXIMATELY 3 FEET BGS PRIOR TO BACKFILLING TO FINAL GRADES.
10. THE REMEDIATION CONTRACTOR IS RESPONSIBLE FOR IMPLEMENTING DUST, ODOR, AND VAPOR CONTROLS TO ADDRESS VOLATILE ORGANIC COMPOUNDS THAT MAY BE PRESENT WITHIN THE SUBSURFACE SOILS AT THE AREAS OF CONCERN. ODORS WILL BE CONTROLLED TO THE SATISFACTION OF NYSEG.

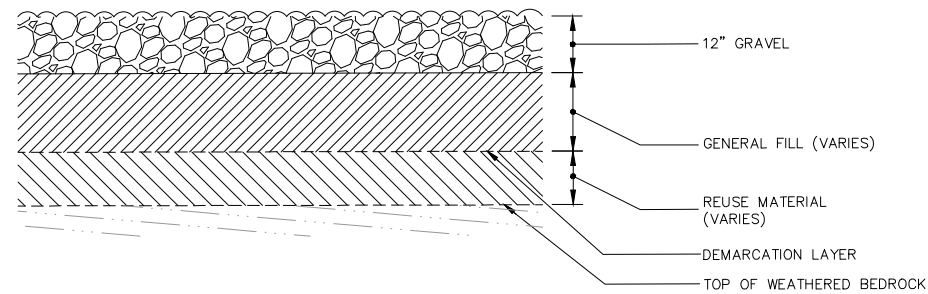
1. PRIOR TO PRE-TRENCHING THE SHORING ALIGNMENT, THE REMEDIATION CONTRACTOR SHALL INSTALL SETTLEMENT MONITORING POINTS ON POINTS SHOWN ON PAGE C-102, IN ACCORDANCE WITH SPECIFICATION SECTION 31 09 13 - GEOTECHNICAL INSTRUMENTATION AND MONITORING.
2. PRIOR TO PRE-TENCHING THE SHORING ALIGNMENT, THE REMEDIATION CONTRACTOR SHALL INSTALL ENGINEERING SEISMOGRAPHS ON STRUCTURES WITHIN 50 FEET OF THE WORK AREA, IN ACCORDANCE WITH SPECIFICATION SECTION 31 09 13 - GEOTECHNICAL INSTRUMENTATION AND MONITORING. ADJUST THE LOCATION OF THE SEISMOGRAPH ABOVE THE ELECTRIC SUBSTATION SUCH THAT THE METER IS AT THE POINT CLOSEST TO THE WORK.
3. DEFLECTION MONITORING SHALL BE CONDUCTED IN ACCORDANCE WITH THE SPECIFICATIONS USING TILTMETERS ATTACHED TO THE EXCAVATION FACE OF THE SOLDIER PILE, AT THE TOP OF THE PILE.
4. BASELINE DEFLECTION MONITORING SHALL BE PERFORMED PRIOR TO ANY EXCAVATION DEEPER THAN 3 FEET BGS.
5. STOP ALL WORK AND NOTIFY NYSEG AND THE REMEDIATION ENGINEER IMMEDIATELY IF VIBRATION, DEFLECTION, OR SETTLEMENT READINGS EXCEED THE LIMITS SPECIFIED IN SPECIFICATION SECTION 31 09 13 - GEOTECHNICAL INSTRUMENTATION AND MONITORING.
6. VIBRATION AND SETTLEMENT MONITORING SHALL BE PERFORMED DURING TRENCHING, SHORING INSTALLATION, EXCAVATION, BACKFILLING, AND DEMOLITION ACTIVITIES.

1. PROVIDE AND MAINTAIN ADEQUATE DRAINAGE AND DEWATERING EQUIPMENT TO COLLECT AND CONTAIN SURFACE WATER AND GROUNDWATER ENTERING THE EXCAVATION OR OTHER PARTS OF THE WORK AREA. KEEP EACH EXCAVATION FREE OF STANDING WATER UNTIL BACKFILLING OPERATIONS ARE COMPLETE AND ACCEPTABLE TO NYSEG.
2. ANY WATER COLLECTED SHALL BE PUMPED TO THE ON-SITE FRAC TANK(S) FOR SAMPLING PRIOR TO TREATMENT OR DISPOSAL AS DIRECTED BY THE REMEDIATION ENGINEER AND NYSEG.

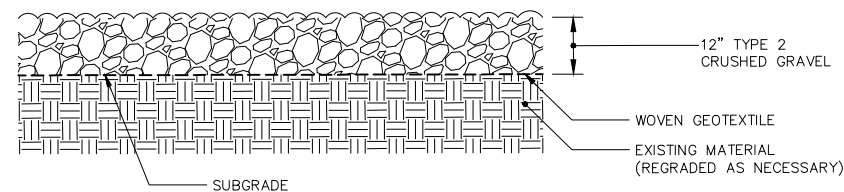
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PROPOSED VEGETATED RESTORATION AREA **1**
- DEEP EXCAVATION
 NOT TO SCALE



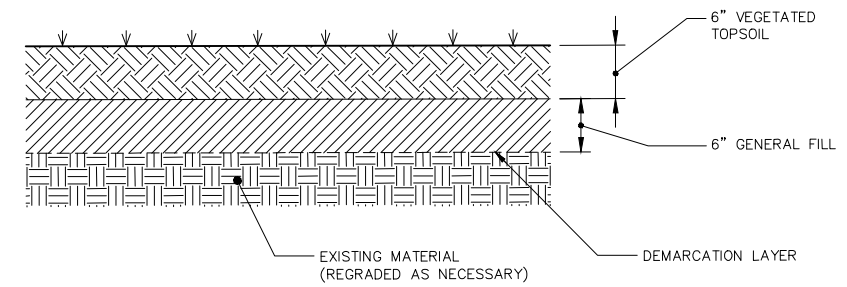
PROPOSED GRAVEL RESTORATION AREA **(2)**
- DEEP EXCAVATION
NOT TO SCALE



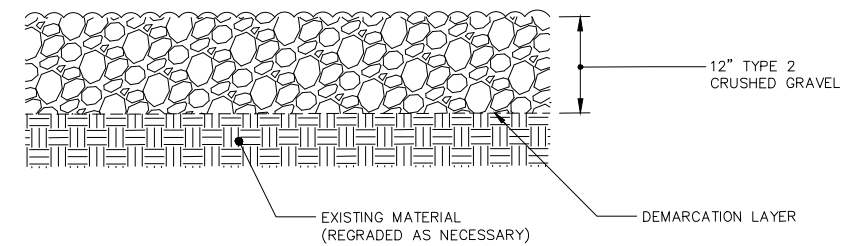
NOTE:

1. COMPACT SOILS IN ACCORDANCE WITH THE SPECIFICATIONS.
2. REFER TO SPECIFICATIONS FOR GEOTEXTILE REQUIREMENTS.

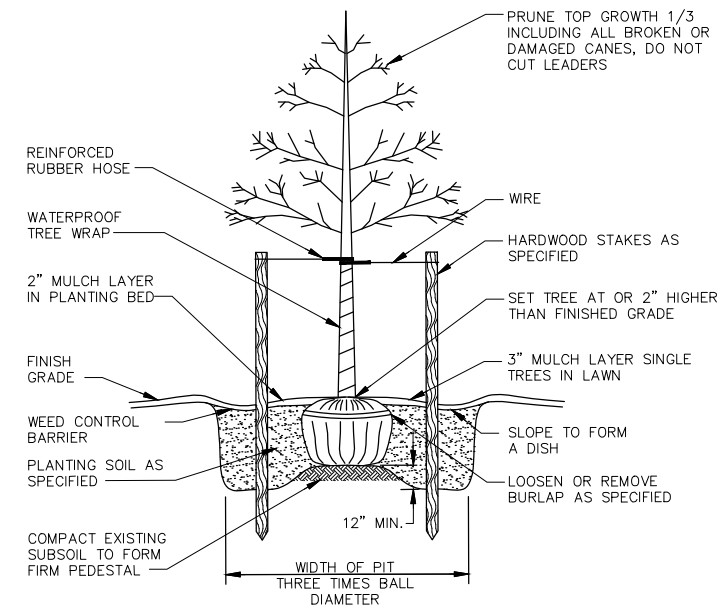
PROPOSED SUPPORT AREA GRAVEL COVER **3**
NOT TO SCALE



PROPOSED VEGETATED RESTORATION AREA **4**
- SURFACE SOIL EXCAVATION
 NOT TO SCALE

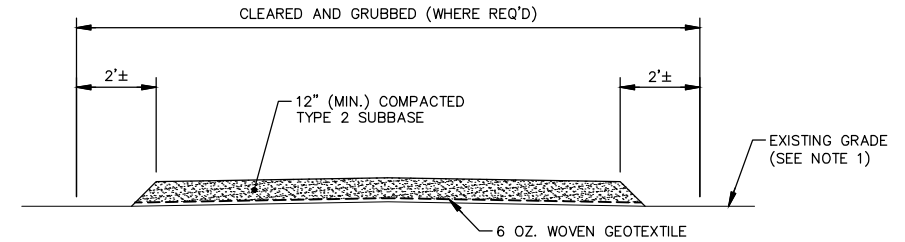


PROPOSED GRAVEL RESTORATION AREA
- SURFACE SOIL EXCAVATION **5**
NOT TO SCALE



PROPOSED TREE TO BE REPLACED **6**
NOT TO SCALE

[illegible]



NOTES:

1. THE EXISTING GRADE SURFACE SHALL BE UNIFORM AND FREE OF DELETERIOUS MATERIALS (E.G. WOODY DEBRIS, ETC.) THAT COULD EFFECT THE STABILITY OF THE PAD.
2. COMPACTION OF TYPE 2 SUBBASE SHALL BE SUFFICIENT DENSITY TO PROVIDE A FIRM AND UNIFORM SURFACE USING APPROPRIATE EQUIPMENT.
3. COMPACTION ABOVE GEOSYNTHETICS SHALL BE PERFORMED IN A MANNER AND USING APPROPRIATE EQUIPMENT THAT AVOIDS DAMAGING THE GEOSYNTHETICS.
4. ANY DAMAGE TO THE TEMPORARY WATER TREATMENT SYSTEM FOUNDATION PAD OR SECONDARY CONTAINMENT SHALL BE ADDRESSED IMMEDIATELY BY THE REMEDIATION CONTRACTOR AT NO ADDITIONAL COST TO NYSEG.
5. TYPE 2 SUBBASE SHALL MEET THE REQUIREMENTS OF NYSOTSS SECTION 733-04 TABLE 733-4a FOR TYPE 2 MATERIAL.
6. CONSTRUCT SECONDARY CONTAINMENT IN ACCORDANCE WITH SPECIFICATION 01 53 53 - TEMPORARY WATER TREATMENT AND MANAGEMENT.

GENERAL WASTEWATER TREATMENT PLANT FOUNDATION PAD

NOT TO SCALE

[illegible]

APPENDIX B
Specifications



SECTION 00 01 10

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| | | |
|----------|---|--------------|
| 31 23 00 | Excavation and Fill | 31 23 00 – 1 |
| 31 50 00 | Excavation Support and Protection | 31 50 00 – 1 |

DIVISION 32 – EXTERIOR IMPROVEMENTS

| | | |
|----------|----------------|--------------|
| 32 90 00 | Planting | 32 90 00 – 1 |
|----------|----------------|--------------|

DIVISION 33 – UTILITIES (NOT USED)

DIVISION 34 – TRANSPORTATION (NOT USED)

DIVISION 35 – WATERWAY AND MARINE CONSTRUCTION (NOT USED)

DIVISION 40 – PROCESS INTERCONNECTIONS (NOT USED)

DIVISION 41 – MATERIAL PROCESSING AND HANDLING EQUIPMENT (NOT USED)

DIVISION 42 – PROCESS HEATING, COOLING, AND DRYING EQUIPMENT (NOT USED)

DIVISION 43 – PROCESS GAS AND LIQUID HANDLING, PURIFICATION, AND STORAGE EQUIPMENT (NOT USED)

DIVISION 44 – POLLUTION AND WASTE CONTROL EQUIPMENT (NOT USED)

DIVISION 45 – INDUSTRY-SPECIFIC MANUFACTURING EQUIPMENT (NOT USED)

DIVISION 46 – WATER AND WASTEWATER EQUIPMENT (NOT USED)

DIVISION 48 – ELECTRICAL POWER GENERATION (NOT USED)

Note:

¹ = Specification included in Contractor Bid Package only.

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SECTION 01 11 00
SUMMARY OF WORK

PART 1 – GENERAL

1.01 LOCATION AND DESCRIPTION OF WORK

- A. The Work is located at the site of a former manufactured gas plant (MGP) at the New York State Electric and Gas Corporation (NYSEG) Clyde Site (the site) located in Clyde, New York (NYSDEC Site No. 859019).
- B. The Work to be performed under this Contract includes, but is not limited to, the following:
 - 1. Site preparation.
 - 2. Location and protection of subsurface utilities to provide clearances for excavation support installation and soil excavation.
 - 3. Installation of excavation support.
 - 4. Excavation of approximately 5,120 in-situ cubic yards of material from the ground surface to the top of bedrock.
 - 5. Backfilling excavation areas.
 - 6. Installation of the soil cover system.
 - 7. Removal of demolition, excavation, and construction waste from the site and disposal at appropriate, NYSEG-approved facilities in accordance with Laws and Regulations.
 - 8. Removal of construction wastewater from the site and onsite treatment and discharge or disposal at appropriate, NYSEG-approved facilities in accordance with Laws and Regulations.
 - 9. Site restoration.
- C. Contracting Method: Work shall be performed under one prime contract.
- D. Contaminants: Work related to MGP Waste and other site-related contaminants, is included.

1.02 REMEDIATION CONTRACTOR'S USE OF SITE

- A. Use of Premises:
 - 1. Confine construction operations to the work areas shown or indicated on the Design Drawings. Do not disturb portions of the site beyond areas of the Work.
 - 2. Confine storage of materials and equipment, and locations of temporary facilities to the areas shown. Move stored products that interfere with operations of NYSEG, other contractors, and others performing work for NYSEG.
 - 3. Authorities having jurisdiction at the site and others performing work for NYSEG shall, for all purposes that may be required by their contracts, have access to the site and the premises used by Remediation Contractor, and Remediation Contractor shall provide safe and proper access.
- B. Promptly repair damage to premises caused by construction operations. Upon completion of the Work, restore premises to specified condition. If condition is not specified, restore to pre-construction condition.

1.03 EASEMENTS AND RIGHTS-OF-WAY

- A. Confine construction operations within NYSEG's property, easements obtained by NYSEG, and the limits shown. Use care in placing construction tools, equipment, excavated materials, and materials and equipment to be incorporated into the Work to avoid damaging property and interfering with traffic. Do not enter private property outside the construction limits without permission from the owner of the property.
- B. On Private Property: Limits of Remediation Contractor's operations on private property are shown on the Design Drawings.

1.04 NOTICES TO OWNERS AND AUTHORITIES OF PROPERTIES ADJACENT TO THE WORK

- A. Notify NYSEG when execution of the Work may affect adjacent properties or use of adjacent properties. NYSEG will notify adjacent property owners; do not contact adjacent property owners directly unless authorized by NYSEG to do so.
- B. When it is necessary to temporarily obstruct access to property, or when utility service connection will be interrupted, provide notices sufficiently in advance to enable affected persons to provide for their needs. Conform notices to Laws and Regulations and, whether delivered orally or in writing, include appropriate information concerning the interruption and instructions on how to limit inconvenience caused thereby.
- C. Notify utility owners and other concerned entities at least two working days, but not more than 10 working days, prior to cutting or closing streets or other traffic areas or excavating near Underground Facilities or exposed utilities.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 14 00
WORK RESTRICTIONS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. Work restrictions shall address the following:
 - a. Allowable work days/hours
 - b. Access and containment
 - c. Public roads
 - d. Work limits
- B. Related Work:
 - 1. Section 02 51 00 – Decontamination

1.02 ALLOWABLE WORK DAYS/HOURS

- A. Normal working hours are between 7:00 a.m. to 5:00 p.m. Monday through Friday. If the Remediation Contractor desires or it becomes necessary for the Remediation Contractor to modify working hours following the start of the Work, NYSEG and Remediation Engineer shall be informed in writing at least 48 hours in advance of the beginning of performances of such Work. Such changes will begin only after receipt of approval from NYSEG and Remediation Engineer.
- B. When Work is scheduled to be performed beyond normal hours, a second shift, at night, or during weekends, the Remediation Contractor shall obtain prior written approval from NYSEG. It is the Remediation Contractor's responsibility to adhere to any local and state noise laws or ordinances that may govern or restrict the performance of the Work. Adequate lighting and all other necessary facilities for carrying out and inspecting the Work shall be provided and maintained by Remediation Contractor in all areas where such Work is being performed.

1.03 ACCESS AND CONTAINMENT

- A. Remediation Contractor shall provide traffic controls to comply with posted speed limits on access roads and in work zones. Construction trucks accessing the site are required to use established truck routes.
- B. Personally-owned vehicles shall be allowed on the site in designated employee parking areas only as directed by the Remediation Engineer. Remediation Contractor is responsible for transport of personnel to designated Work areas within the site, if required.
- C. The Remediation Contractor shall confine vehicle and equipment fueling, maintenance, and awaiting maintenance operations to areas designated by the Remediation Engineer. Provide these designated areas with measures that prevent contamination of the adjacent waterway. Measures may include, but are not limited to, covered or roofed areas, drip pans, using spill and overflow equipment, berming, cleaning pavement surfaces to remove oil and grease from leaks, or draining all parts of fluids. Vehicles and other construction equipment shall be

cleaned and decontaminated (as needed) in approved decontamination areas in accordance with the Design Drawings and Section 02 51 00 – Decontamination.

1.04 PUBLIC ROADS

- A. The use and protection of all public roadways involved in this Contract shall be in accordance with all applicable state, county, and local requirements. All transportation of equipment and materials along public roadways shall be preceded by the application and issuance of all necessary road and bridge crossing permits from the appropriate city/town/county if not already covered under other permits. The Remediation Contractor shall be responsible for all required permits and associated fees. Damages to existing roadways or bridges shall be repaired by the Remediation Contractor, to its original condition or better, at no additional cost to NYSEG.

1.05 WORK LIMITS

- A. Working limits where applicable have been depicted on the Design Drawings. Remediation Contractor shall restrict all work activities, including, but not limited to, storage of materials to be incorporated in the project, as well as parking of vehicles, heavy equipment, project trailers, etc., to the working limits designated on the Design Drawings. However, where appropriate and in accordance with appropriate Specifications and approvals, the Remediation Contractor may provide offsite storage of construction materials or equipment as necessary.
- B. Do not transport contaminated materials or equipment that has not been decontaminated outside of limits of specified work.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 14 13

SITE SECURITY AND ACCESS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Work under this Section includes implementing measures at the site to provide for site security and to restrict access.
2. Remediation Contractor shall safely guard all Work, the Project, products, materials, equipment, and property from loss, theft, damage, and vandalism until Substantial Completion, or as otherwise directed by NYSEG. Remediation Contractor's duty includes safely guarding NYSEG's property in the vicinity of the Work and Project, the site, and other private property in the vicinity of the Project from injury and loss in connection with the performance of the Project.
3. Costs for security required under this Section shall be paid by Remediation Contractor.
4. Make no claim against NYSEG for damage resulting from trespass.
5. Pay full compensation for, or repair and replace, damage to property of NYSEG and others arising from failure to furnish adequate security.
6. Provide temporary fencing, temporary gates, and privacy screens in accordance with the Contract Documents and this Section.

B. Related sections

1. Section 01 14 00 – Work Restrictions
2. Section 01 55 13 – Temporary Access Roads
3. Section 01 58 13 – Temporary Project Signage

1.02 SUBMITTALS

A. Shop Drawings: Submit drawings showing proposed locations and extent of temporary fencing and gates at the site.

B. Product Data: Submit manufacturer's data, specifications, and installation instructions for temporary fencing, temporary gates, and privacy screens.

C. Security Plan:

1. Submit a written Remediation Contractor's Security Plan as a sub-section of the Remediation Contractor's Project Operations Plan. The plan shall include an inventory of equipment to be used and a schedule for construction of security measures to be implemented by the Remediation Contractor with respect to the Remediation Contractor's equipment and security responsibilities. At a minimum, the plan shall include the following:
 - a. Procedures for securing all equipment and work areas when unattended within and outside the fenced areas. This includes locking cabs and removing keys when the equipment is not in use. Security mechanisms for various equipment and work areas include fencing, locks, signage and power supply.
 - b. Sign-in and sign-out requirements for all site entrants. Maintain a list of all Project Team members from the Remediation Contractor, NYSEG and Remediation Engineer who are typically at the site or may have occasion to be at the site (weekly meetings, inspections, etc.).

- c. Requirements for authorizing visitors/site entrants not included on the "Typical Team Member" list (e.g., photo ID verification, sign-in, notification to Remediation Contractor's Supervisor to confirm that site entry is permitted).
 - d. All site entrants must have proof on file of Occupational Safety and Health Administration (OSHA) 40-hour certification and be up to date with annual refresher requirements to enter the exclusion zone.
 - e. Reporting protocol for damaged, lost or vandalized equipment.
 - f. Example of the Daily Sign-in Log for the site.
 - g. Identification of site Security Subcontractor person(s) who will be responsible for maintaining the Daily Sign-in Log.
2. Maintain a daily log of workers and visitors and submit to NYSEG.

1.03 SECURITY MEASURES

- A. Only personnel in the employment of NYSEG or its Remediation Contractor, Subcontractors, Suppliers, and New York State Department of Environmental Conservation (NYSDEC) shall be allowed within the Project Work Limits. No other personnel are allowed without the express written approval of NYSEG.
- B. Authorized vehicles and personnel may enter the site in accordance with Sections 01 14 00 - Work Restrictions and 01 55 13 - Temporary Access Roads.

1.04 REMEDIATION CONTRACTOR RESPONSIBILITIES

- A. Construct temporary fences (security fence and construction barrier), gates, booths and other security measures and provide security personnel as specified in this section.
 - 1. Install temporary security fence and access gate(s) around the perimeter of the Project Work Limits including, but not limited to the office trailers, access road, and material and equipment staging areas. Install access gate(s) to permit equipment access to the work limits. Security fencing shall be galvanized chain link fence installed in accordance with paragraph 2.01 below and as shown on the Design Drawings.
 - 2. Fasten privacy screen material to all security and construction barrier fencing in accordance with paragraph 2.02 below.
 - 3. Install personnel-gates as a means of secondary egress in the event of an emergency.
 - 4. Install safety/construction fencing (e.g., plastic snow fence) around any sections of open excavation.
- B. Remove temporary site controls following completion of the Work. Restore in-kind any disturbance resulting from the construction of temporary controls.
- C. Maintain uninterrupted safe access 24 hours per day, 7 days per week to the electrical substation for NYSEG personnel and emergency response vehicles. It is anticipated that NYSEG will double-lock the gates into and out of gated project areas using its own locks joined with locks to be provided by the Remediation Contractor (i.e., providing access to both NYSEG and the Remediation Contractor).
- D. Maintain Remediation Contractor's health and safety personnel onsite presence during the Work.
- E. Restrict access of persons and vehicles onto the site. Allow only authorized persons to enter the site in accordance with the Remediation Contractor's Security Plan.
- F. Maintain all materials, tools and equipment in a locked container when not in use.

- G. Maintain the security program throughout construction until NYSEG's final acceptance of work precludes the need for the Remediation Contractor's security program.
- H. Repair all damage to property arising from failure to provide adequate security, at no additional cost to NYSEG.
- I. Provide and maintain temporary security fencing equal to the existing if existing fencing or barriers are breached or removed for construction in a manner satisfactory to NYSEG.
- J. Report any theft or vandalism to NYSEG and document the incident in the Daily Construction Report. Required details include who, what, where, when, why and corrective measures implemented to prevent future occurrences. The Remediation Contractor shall make no claim against NYSEG or adjacent property owner(s) for damage, due to Remediation Contractor negligence, resulting from trespass and shall replace/repair damage at no additional cost to NYSEG. If Remediation Contractor personnel encounter trespassers, they shall notify NYSEG.
- K. Maintain a daily security log of all site workers and visitors throughout the Project. Include the date, name, affiliation, purpose of visit, time in, and time out for each site worker and visitor. Submit copy of daily security log to Construction Manager and Remediation Engineer with daily construction report in accordance with Section 01 32 26 – Construction Progress Reporting.

PART 2 – PRODUCTS

2.01 TEMPORARY SECURITY FENCE

- A. Structural and roll-formed shapes may be used in lieu of pipe sections. The structural or roll-formed shapes shall have a bending strength greater than the pipe section when measured under a 6-foot cantilever load.
- B. Posts, rails and braces:
 - 1. Schedule 40 steel pipe.
 - 2. Dimensions and weights (minimum):

| | Outside Dia. (Inches) | Gauge |
|----------------------------------|--------------------------|-------|
| End, Corner, Gate and Pull Posts | 1.375 | 16 |
| Line Posts | 1.375 | 16 |
| Top Rails and Braces | 1.375 | 16 |

- C. Chain-link fabric:
 - 1. One piece of 11.5-gauge steel wire fabric; 2.375-inch mesh.
 - 2. Minimum 6 feet high when installed.
- D. Gates:
 - 1. Emergency access gates – 36" to work with adjacent security fencing and construction barrier as appropriate.
 - 2. Provide chain-link swing gates with minimum height of six feet and minimum width of 12 feet. Gate fabric and framework shall be galvanized steel.

3. Install additional or trusses as necessary to provide rigidity without sag or twist. Locking devices, latches, stops and other hardware as required for a complete operating gate.
 - a. Operate from either side.
 - b. Use a high-security padlock. The padlock shall be rust-proofed and shall be furnished with six like keys. Padlock shall be as manufactured by Master Lock Company or equivalent.
 - c. Lock shall be placed in series with a lock to be provided by NYSEG to provide NYSEG personnel with continuous access to the electrical substation within the site security fence.
 4. Fabric of gates shall be the same as temporary security fence.
- E. Miscellaneous:
1. Based on soil conditions, anchor posts in precast concrete blocks or panel stands placed on the ground surface. Weight panel stands with sand bags to provide stability, as necessary. Install temporary site security fence posts using non-intrusive methods. Do not drive posts into the ground and/or set posts into holes and backfill holes.
 2. Install temporary fence a minimum of 8 feet offset from the permanent electrical substation security fence or have NYSEG electrically ground the fence (at Remediation Contractor expense).
 3. Wire ties or clips shall be a minimum of 6 gauge.
 - a. Use hog rings to tie fabric to tension wire, as necessary.

2.02 TEMPORARY VISUAL BARRIER

- A. Construction fence screen fabric
1. CiFabrics Economy Envirotex or approved equivalent.
 2. Fabric roll height shall be 5'8".
 3. Color: Green or black.
 4. Opacity: 85 percent, minimum.
- B. Fastening
1. Wire ties or clips shall be a minimum of 6 gauge.
 - a. Hog rings may be used to tie fabric to temporary construction fence fabric wire.

2.03 PERMANENT SECURITY FENCE

- A. Structural and roll-formed shapes may be used in lieu of pipe sections. The structural or roll-formed shapes shall have a bending strength greater than the pipe section when measured under a 6-foot cantilever load.
- B. Posts, rails and braces:
1. Schedule 40.
 2. Dimensions and weights (minimum):

| | Outside Dia. (Inches) | Weight (lbs.)/ Feet |
|----------------------------|--------------------------|------------------------|
| End, Corner and Pull Posts | 3.50 | 7.58 |
| Line Posts (Heavy Duty) | 3.50 | 7.58 |
| Top Rails and Braces | 1.90 | 2.72 |
| Center Rails | 1.66 | 2.27 |
| Bottom Rails | 1.66 | 2.27 |

| | Outside Dia. (Inches) | Weight (lbs.)/ Feet |
|--|--------------------------|------------------------|
| Gate Posts: | | |
| Leaves 6 feet wide or less | 2.875 | 5.79 |
| Leaves over 6 feet, including 13 feet wide | 4.00 | 9.11 |

- C. Chain-link fabric:
- One piece of 6-gauge steel wire fabric; 2-inch mesh twisted and circular barbed Concertina wire with three rows of barbed wire at the top. Knuckle selvage at bottom.
 - 10 feet high when installed.
- D. Gates:
- Gate type shall be cantilever slide type.
 - Structural members:
 - Top rail: one-piece precision extruded aluminum-alloy structural section with integral enclosed track.
 - Bottom rail: 2-inch x 4-inch extruded aluminum-alloy.
 - Uprights: 2-inch square extruded aluminum-alloy.
 - Gate posts 4-inch outside diameter gate posts set 36-inches minimum below grade in 16-inch diameter concrete footer
 - Braces and minimum 3/4-inch-diameter trusses to provide rigidity without sag or twist. Locking devices, latches, stops and other hardware as required for a complete operating gate.
 - Operate from either side.
 - Use a high-security padlock. The padlock shall be rust-proofed and shall be furnished with six like keys. Padlock shall be as manufactured by Master Lock Company or equivalent.
 - Lock shall be placed in series with a lock to be provided by NYSEG to provide NYSEG personnel with continuous access to the electrical substation within the site security fence.
 - Fabric of gates same as chain link fence.
- E. Miscellaneous:
- Wire ties or clips shall be a minimum of 6 gauge.
 - Remount all signs on Permanent galvanized fencing to match preconstruction conditions or as directed by NYSEG or Design Engineer.
 - Barbed Wire Support Arms: Pressed steel for three rows of barbed wire attached to each arm. Supporting arms shall be integral with post-top weather cap. Supporting arms shall be single 45-degree, one for each post.
 - Barbed Wire: Commercial quality steel, two-strand, 11-gage line wire with 14-gage, four-point twisted aluminum alloy barbs spaced five inches on centers. Commercial quality steel, circular concertina barbed wire to wrap three strands of straight barbed wire.
 - Use flat barbed concertina wire on cantilever slide gate and adjacent fencing as necessary to facilitate proper operation.

PART 3 – EXECUTION

3.01 PROJECT SIGN

- A. Place all required project signage as required under Section 01 58 13 – Temporary Project Signage.

NYSEG
REMEDIAL DESIGN
CLYDE FORMER MGP SITE
VILLAGE OF CLYDE, WAYNE COUNTY, NEW YORK

SITE SECURITY AND ACCESS
01 14 13 – 5
REVISION NO. 00
DATE ISSUED: MAY 2019

Arcadis of New York, Inc

3.02 TEMPORARY FENCING AND GATES

A. Installation:

1. Install temporary fencing and gates used for Site security in accordance with the Contract Documents and manufacturer's instructions.
2. Install temporary fence a minimum of 8 feet offset from the permanent electrical substation security fence or have NYSEG electrically ground the fence (at Remediation Contractor expense).
3. Install privacy screens in accordance with manufacturer's instructions on all temporary fencing and gates used for Site security.

B. Maintenance:

1. Maintain temporary fencing and gates throughout the Project. Repair damage to temporary fencing and gates, and replace fencing and gates when required to maintain Site security.
2. Adjust or relocate temporary fencing and gates at the Site as needed to accommodate the Work and construction sequencing.
3. Maintain privacy screens throughout the Project. Promptly repair or replace damaged privacy screens.

C. Removal:

1. Remove temporary fencing and gates upon Substantial Completion, or when otherwise directed by NYSEG.
2. Repair damage caused by temporary fencing and gates and their removal, and restore the Site to condition required by the Contract Documents. If restoration of damaged areas is not specified, restore to pre-construction condition.

END OF SECTION

SECTION 01 15 00

REMEDIATION CONTRACTOR'S PROJECT OPERATIONS PLAN

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Remediation Contractor shall prepare and submit to Remediation Engineer a Project Operations Plan (POP) in accordance with this Section.
2. POP shall clearly describe Remediation Contractor's proposed means, methods, and sequence of construction operations, and shall demonstrate compliance with the Contract Documents.

B. Related Work:

1. Section 01 32 16 – Construction Progress Schedule
2. Section 01 71 23 – Field Engineering
3. Section 02 61 13 – Excavation and Handling of Contaminated Material
4. Section 31 09 13 – Geotechnical Instrumentation and Monitoring
5. Section 31 50 00 – Excavation Support and Protection

1.02 SUBMITTALS

A. Informational Submittals:

1. Remediation Contractor's POP: Submit in accordance with Article 1.03 of this Section.

1.03 POP SUBMITTAL

A. Remediation Contractor's POP shall address and include the following:

1. Remediation Contractor's Organizational Structure: Specific chain of command and overall responsibilities of Remediation Contractor personnel. Include the following:
 - a. Name and general functions and responsibilities of the following:
 - 1) Project manager.
 - 2) Field superintendent.
 - 3) Site Health and Safety Officer.
 - 4) Project Emergency Coordinator.
 - 5) Field engineer.
 - 6) Foreman.
 - 7) Equipment operators and laborers.
 - 8) Others as appropriate.
 - b. Designation of Remediation Contractor personnel that will reside at the site for the duration of the Project.
2. Work Schedule: Proposed work days and work hours. Include copy of Remediation Contractor's initial Progress Schedule, prepared in accordance with Section 01 32 16 – Construction Progress Schedule.
3. List of major construction equipment.
4. List of major Subcontractors and Suppliers. Include name, role, and contact information for the following:
 - a. Surveyor.
 - b. Structural Engineer.
 - c. Supplier and/or installer of excavation bracing.

- d. Suppliers and sources of offsite fill and aggregates.
 - e. Treatment, disposal, and recycling facilities.
 - f. Others as appropriate.
5. Access and Site Preparation Plan: Prepare plan describing means and methods for accessing the Work Area and supporting the Work. At a minimum, include the following:
 - a. Proposed access strategy.
 - b. Proposed support area strategy, including office and sanitary facilities.
 6. Waste Management Plan: In accordance with Section 02 61 13 - Excavation and Handling of Containerized Material.
 7. Special Instrumentation Installation Plan: In accordance with Section 31 09 13 - Geotechnical Instrumentation and Monitoring.
 8. Excavation Support Plan: In accordance with Section 31 50 00 - Excavation Support and Protection.
 9. Excavation and Backfilling Plan: In accordance with Section 31 23 00 - Excavation and Fill.
 10. Site Utilization Plan: Site plan showing the proposed location and layout of the following:
 - a. Temporary facilities (i.e., sanitary, first-aid, parking/storage, frac tanks, water treatment, containment systems, etc.).
 - b. Temporary access roads and parking areas.
 - c. Staging area.
 - d. Equipment storage and fueling area(s).
 - e. Temporary decontamination area(s). Clearly identify location and size of each.
 - f. Temporary containment area(s). Clearly identify location and size of each.
 11. Comprehensive Work Plan: Written description of the general sequence and scope of the following:
 - a. Mobilization and site preparation.
 - b. Site access controls and security.
 - c. Surveying.
 - d. Utility clearance, mark-out, and verification.
 - e. Erosion and sediment control.
 - f. Odor, vapor, and dust control.
 - g. Clearing and grubbing.
 - h. Excavation, including material handling, transportation and staging approach.
 - i. Excavation support.
 - j. Soil cover installation.
 - k. Backfilling and grading.
 - l. Material dewatering.
 - m. Water treatment.
 - n. Waste management.
 - o. Site restoration.
 - p. Demobilization.

- B. Submit POP to Remediation Engineer the sooner of: seven days prior to pre-construction conference, or 30 days prior to Remediation Contractor's scheduled mobilization to the Site.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 26 00

CONTRACT MODIFICATION PROCEDURES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. This Section expands upon the provisions of the General Conditions and Supplementary Conditions, and includes administrative and procedural requirements for the following:
 - a. Requests for interpretation (RFI).
 - b. Clarification notices.
 - c. Minor changes in the Work and Field Orders.
 - d. Work Change Directives.
 - e. Proposal requests.
 - f. Change Order requests.
 - g. Change Orders.

B. Submit Contract modification documents to Remediation Engineer.

1. Retain at Remediation Contractor's office and at the site a complete copy of each Contract modification document and related documents, and Remediation Engineer's response.

C. Related Work:

1. Section 01 26 13 – RFI Form
2. Section 01 26 39 – Field Order Form
3. Section 01 26 49 – Work Change Directive Form
4. Section 01 26 53 – Proposal Request Form
5. Section 01 26 57 – Change Order Request Form
6. Section 01 26 63 – Change Order Form

1.02 REQUESTS FOR INTERPRETATION

A. General:

1. Submit requests for interpretation to obtain clarification or interpretation of the Contract Documents. Report conflicts, errors, ambiguities, and discrepancies in the Contract Documents using requests for interpretation.
2. Do not submit request for interpretation when other form of communication is appropriate, such as submittals, requests for substitutions or "or equals", notices, ordinary correspondence, or other form of communication. Improperly prepared or inappropriate requests for interpretation will be returned without response or action.
3. Submit written requests for interpretation to Remediation Engineer. Remediation Contractor and NYSEG may submit requests for interpretation.

B. Procedure:

1. Submit one original and one copy of each request for interpretation. Submit each request for interpretation with separate letter of transmittal.
2. Remediation Engineer will provide timely review of requests for interpretation. Allow sufficient time for review and response.
3. Remediation Engineer will maintain a log of all requests for interpretation. A copy of the log will be provided upon request.

4. Remediation Engineer will provide written response to each request for interpretation. One copy of Remediation Engineer's response will be distributed to:
 - a. Remediation Contractor.
 - b. NYSEG.
 - c. Remediation Engineer.
 5. If Remediation Engineer requests additional information to make an interpretation, provide information requested within 10 days, unless Remediation Engineer allows additional time, via correspondence referring to request for interpretation number.
 6. If Remediation Contractor or NYSEG believes that a change in the Contract Price or Contract Times or other change to the Contract is required, notify Remediation Engineer in writing before proceeding with the Work associated with the request for interpretation.
- C. Submit each request for interpretation on the request for interpretation form included with this Section, or other form acceptable to Remediation Engineer.
1. Number each request for interpretation using a two-digit sequential number. First request for interpretation will be "01".
 2. In space provided on form, describe the interpretation requested. Provide additional sheets as necessary. Include text and sketches as required in sufficient detail for Remediation Engineer's response.
 3. When applicable, request for interpretation shall include Remediation Contractor's recommended resolution.

1.03 CLARIFICATION NOTICES

- A. General:
1. Clarification notices provide clarification or interpretation of conflicts, errors, ambiguities, and discrepancies in the Contract Documents that are identified by the Remediation Engineer.
 2. Clarification notices do not change the Contract Price or Contract Times, and do not alter the Contract Documents.
 3. Clarification notices, when required, will be initiated and issued by the Remediation Engineer as correspondence with additional information as required.
- B. Procedure:
1. One copy of each written clarification notice will be distributed to:
 - a. Remediation Contractor.
 - b. NYSEG.
 - c. Remediation Engineer.
 - d. New York State Department of Environmental Conservation (NYSDEC).
 2. If Remediation Contractor or NYSEG believes that a change in the Contract Price or the Contract Times or other change to the Contract is required, notify Remediation Engineer in writing before proceeding with the Work associated with clarification notice.
 3. If clarification notice is unclear, submit request for interpretation.

1.04 MINOR CHANGES IN THE WORK AND FIELD ORDERS

- A. General:
1. Field Orders authorize minor variations in the Work, but do not change the Contract Price or Contract Times.
 2. Field Orders, when required, will be initiated and issued by Remediation Engineer on the Field Order form included with this Section, or other form acceptable to Remediation Engineer.
 3. Remediation Engineer will maintain a log of all Field Orders issued.

- B. Procedure:
1. One copy of each Field Order will be distributed to:
 - a. Remediation Contractor.
 - b. NYSEG.
 - c. Remediation Engineer.
 - d. NYSDEC.
 2. If Remediation Contractor or NYSEG believes that a change in the Contract Price or the Contract Times or other change to the Contract is required, immediately notify Remediation Engineer in writing before proceeding with the Work associated with the Field Order.
 3. If Field Order is unclear, submit request for interpretation.

1.05 WORK CHANGE DIRECTIVES

- A. General:
1. Work Change Directives, when required, order additions, deletions, or revisions to the Work.
 2. Work Change Directives do not change the Contract Price or Contract Times, but is evidence that the parties to the Contract expect that the change ordered or documented by the Work Change Directive will be included in a subsequently issued Change Order following negotiations by the parties as to its effect, if any, on the Contract Price or Contract Times.
 3. Work Change Directives, when required, will be initiated and issued by the Remediation Engineer on the Work Change Directive form included with this Section, or other form acceptable to NYSEG and Remediation Engineer.
- B. Procedure:
1. Four originals of Work Change Directive signed by NYSEG and Remediation Engineer will be furnished to the Remediation Contractor, who shall promptly sign each original Work Change Directive and, within five days of receipt, return all originals to the Remediation Engineer.
 2. Signed Work Change Directives will be distributed as follows:
 - a. Remediation Contractor: One original.
 - b. NYSEG: Two originals.
 - c. Remediation Engineer: One original.
 3. When required by the Remediation Engineer, document the Work performed under each separate Work Change Directive. For each day, document the following in a format acceptable to Remediation Engineer:
 - a. Number and type of workers employed, and hours worked.
 - b. Equipment used, including manufacturer, model, and year of equipment, and number of hours for each.
 - c. Materials used.
 - d. Receipts for and descriptions of materials and equipment incorporated into the Work.
 - e. Invoices and labor and equipment breakdowns for Subcontractors and Suppliers.
 - f. Other information required by NYSEG or Remediation Engineer.
 4. Submit documentation to Remediation Engineer as a Change Order request.

1.06 PROPOSAL REQUESTS

- A. General:
1. Proposal requests are for requesting the effect on the Contract Price and the Contract Times and other information relative to contemplated changes in the Work.
 2. Proposal requests do not authorize changes or variations in the Work, and do not change the Contract Price or Contract Times, or terms of the Contract.

3. Proposal requests may be initiated by Remediation Engineer or NYSEG.
4. Proposal requests will be issued on the proposal request form included with this Section, or other form acceptable to NYSEG and Remediation Engineer.

B. Procedure:

1. One copy of each signed proposal request will be furnished to Remediation Contractor, with one copy each distributed to:
 - a. NYSEG.
 - b. Remediation Engineer.
2. Submit request for interpretation to clarify conflicts, errors, ambiguities, and discrepancies in proposal request.
3. Upon receipt of proposal request, Remediation Contractor shall prepare and submit a Change Order request, in accordance with this Section, for the proposed Work described in the proposal request.

1.07 CHANGE ORDER REQUESTS

A. General:

1. Submit written Change Order request to Remediation Engineer in response to each proposal request, and when Remediation Contractor believes a change in the Contract Price or Contract Times, or other change to the terms of the Contract is required.

B. Procedure:

1. Submit to Remediation Engineer one original and one copy of each Change Order request with accompanying documentation. Submit each Change Order request with separate letter of transmittal.
2. Remediation Engineer will review Change Order request and either request additional information from Remediation Contractor or provide to NYSEG a recommendation regarding approval of the Change Order request.
3. When Remediation Engineer requests additional information to render a decision, submit required information within five days of receipt of Remediation Engineer's request, unless Remediation Engineer allows more time. Submit the required information via correspondence that identifies the Change Order request number.
4. Upon completing review, one copy of Remediation Engineer's written response, if any, will be distributed to:
 - a. Remediation Contractor.
 - b. NYSEG.
 - c. Remediation Engineer.
5. If Change Order request is recommended for approval by Remediation Engineer and approved by NYSEG, a Change Order will be issued.

C. Each Change Order request shall be submitted on the Change Order request form included with this Section, or other form acceptable to NYSEG and Remediation Engineer.

1. Number each Change Order request using a two-digit sequential number. First Change Order request will be "01".
2. In space provided on the form:
 - a. Describe the scope of each proposed change. Include text and sketches on additional sheets as required to provide detail sufficient for Remediation Engineer's review and response. If the proposed change is submitted in response to a proposal request, write in as scope, "In accordance with Proposal Request No." followed by the proposal request number. Provide written clarifications, if any, to scope of change.

- b. Provide justification for each proposed change. If the proposed change is submitted in response to a proposal request, write in as justification, "In accordance with Proposal Request No." followed by the proposal request number.
 - c. List the total change in the Contract Price and Contract Times for each proposed change.
- 3. Unless otherwise directed by Remediation Engineer, attach to the Change Order request detailed breakdowns of pricing (Cost of the Work and Remediation Contractor's fee), including:
 - a. List of Work tasks to accomplish the change.
 - b. For each task, labor cost breakdown including labor classification, total hours per labor classification, and hourly cost rate for each labor classification.
 - c. Construction equipment and machinery to be used, including manufacturer, model, and year of manufacture, and number of hours for each.
 - d. Detailed breakdown of materials and equipment to be incorporated into the Work, including quantities, unit costs, and total cost, with Supplier's written quotations.
 - e. Breakdowns of the Cost of the Work and fee for Subcontractors, including labor, construction equipment and machinery, and materials and equipment incorporated into the Work, other costs, and Subcontractor fees.
 - f. Breakdown of other costs eligible, in accordance with the General Conditions.
 - g. Other information required by Remediation Engineer.
 - h. Remediation Contractor's fees applied to eligible Remediation Contractor costs and eligible Subcontractor costs.

1.08 CHANGE ORDERS

A. General:

- 1. Change Orders will be recommended by Remediation Engineer, and signed by NYSEG and Remediation Contractor, to authorize additions, deletions, or revisions to the Work, or changes to the Contract Price or Contract Times.
- 2. Change Orders will be issued on the Change Order form included with this Section or other form acceptable to NYSEG and Remediation Engineer.

B. Procedure:

- 1. Four originals of each Change Order will be furnished to Remediation Contractor, who shall promptly sign each original Change Order and, within five days of receipt, return all originals to Remediation Engineer.
- 2. Remediation Engineer will sign each original Change Order and forward them to NYSEG.
- 3. After approval and signature by NYSEG, signed Change Orders will be distributed as follows:
 - a. Remediation Contractor: One original.
 - b. NYSEG: Two originals.
 - c. Remediation Engineer: One original.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 FORMS

- 1. See Section 01 26 00 – Contract Modification Procedures Part 1.01D for specific contract modification forms.

END OF SECTION

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NYSEG
CLYDE FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF CLYDE, WAYNE COUNTY, NEW YORK

REQUEST FOR INTERPRETATION NO. _____

Remediation Contractor: _____ Purchase Order No.: _____

Date Transmitted: _____ Date Received: _____

Date Response Requested: _____ Date Response Transmitted: _____

Subject: _____

Reference(s): _____
Specification Section(s) Drawing(s) / Note(s) / Detail(s)

Interpretation Requested:

Signature: _____ Date: _____

Remediation Engineer's Response:

Signature: _____ Date: _____

END OF REQUEST FOR INTERPRETATION

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NYSEG
CLYDE FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF CLYDE, WAYNE COUNTY, NEW YORK

FIELD ORDER NO.

Remediation Contractor: _____ Purchase Order No.: _____

Date Issued: _____ Effective Date: _____

Subject: _____

Reference(s): _____
Specification Section(s) Drawing(s) / Note(s) / Detail(s)

Attention:

Remediation Contractor is hereby directed to promptly execute this Field Order for minor changes in the Work without changes in Contract Price or Contract Times. If Remediation Contractor considers that a change in Contract Price or Contract Times is required, please notify Remediation Engineer immediately and before proceeding with this Work.

Description:

Attachments:

Issued by Remediation Engineer:

Signature: _____ Date: _____

Receipt Acknowledged by Remediation Contractor:

Signature: _____ Date: _____

END OF FIELD ORDER

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FIELD ORDER FORM
01 26 39 – 2
REVISION NO. 00
DATE ISSUED: MAY 2019

NYSEG
REMEDIAL DESIGN
CLYDE FORMER MGP SITE
VILLAGE OF CLYDE, WAYNE COUNTY, NEW YORK

NYSEG
CLYDE FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF CLYDE, WAYNE COUNTY, NEW YORK

WORK CHANGE DIRECTIVE NO. _____

Remediation Contractor: _____ Purchase Order No.: _____

Date Issued: _____ Effective Date: _____

Remediation Contractor is directed to proceed promptly with the following change(s):

| Item No. | Description |
|----------|-------------|
| | |
| | |
| | |
| | |

Scope of Work:

Attachments:

Purpose for Work Change Directive:

Authorization for the Work described herein to proceed on the basis of Cost of the Work due to:

- ☐ Non-agreement on pricing of proposed change.
- ☐ Necessity to expedite Work described herein prior to agreeing to changes in Contract Price and Contract Times.

Estimated Change in Contract Price and Contract Times:

Contract Price:

\$ _____ ☐ Increase ☐ Decrease ☐ No Change

Contract Times:

_____ Days ☐ Increase ☐ Decrease ☐ No Change

Recommended for Approval by Remediation Engineer:

Signature: _____ Date: _____

Authorized by NYSEG:

Signature: _____ Date: _____

Receipt Acknowledged by Remediation Contractor:

Signature: _____ Date: _____

END OF WORK CHANGE DIRECTIVE

NYSEG
CLYDE FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF CLYDE, WAYNE COUNTY, NEW YORK

PROPOSAL REQUEST NO. _____

Remediation Contractor: _____ Purchase Order No.: _____

Date: _____

Subject: _____

Please submit a complete Change Order request for the proposed modifications described below. If the associated Change Order request is approved, a Change Order will be issued to authorize adjustment to the scope of the Work. This proposal request is not a Change Order, Work Change Directive, or an authorization to proceed with the proposed Work described below.

Scope of Proposed Work:

Requested by Remediation Engineer:

Signature: _____ Date: _____

END OF proposal request

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NYSEG
CLYDE FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF CLYDE, WAYNE COUNTY, NEW YORK

CHANGE ORDER REQUEST NO.

Remediation Contractor: _____ Purchase Order No.: _____

Date: _____ Submitted in Response to Proposal Request No.: _____

Subject: _____

Scope of Work:

Attach and list supporting information as required.

Justification:

Changes in Contract Price and Contract Times:

For Contract Price, when requested by Remediation Engineer, attach detailed cost breakdowns for Remediation Contractor and Subcontractors, Supplier quotations, and other information required. For the Contract Times, state increase, decrease, or no change to Contract Times for Substantial Completion, readiness for final payment, and Milestones, if any. If increase or decrease, state specific number of days for changes to the Contract Times.

The following changes are proposed to the Contract Price and Contract Times:

| Description | Contract Price (dollars) | Contract Times (days) | |
|--|-----------------------------|--------------------------|-------|
| | | Substantial | Final |
| 1. | \$ | | |
| 2. | \$ | | |
| Total This Change Order Proposal: | \$ | | |

Changes to Milestones (if any): _____

The adjustment proposed is the entire adjustment to the Remediation Contract to which Remediation Contractor believes it is entitled as a result of the proposed change.

Requested by Remediation Contractor:

Signature: _____ Date: _____

END OF CHANGE ORDER REQUEST

NYSEG
CLYDE FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF CLYDE, WAYNE COUNTY, NEW YORK

CHANGE ORDER NO. _____

Remediation Contractor: _____ Purchase Order No.: _____

Date Issued: _____ Effective Date: _____

The Contract Documents are modified as follows upon execution of this Change Order:

Description:

Attachments:

Change in Contract Price:

- A. Original Contract Price: \$ _____
- B. ☐ Increase ☐ Decrease ☐ No Change
from previously approved Change Order Nos. ____ to ____: \$ _____
- C. Contract Price prior to this Change Order (Lines A+B): \$ _____
- D. ☐ Increase ☐ Decrease ☐ No Change
of this Change Order: \$ _____
- E. Contract Price incorporating this Change Order (Lines C+D): \$ _____

Change in Contract Times:

A. Original Contract Times ☐ Working days ☐ Calendar days:

Substantial Completion (days or date): _____

Ready for Final Payment (days or date): _____

B. ☐ Increase ☐ Decrease ☐ No Change
from previously approved Change Order Nos. ____ to ____:

Substantial Completion (days or date): _____

Ready for Final Payment (days or date): _____

C. Contract Times prior to this Change Order (Lines A+B):

Substantial Completion (days or date): _____

Ready for Final Payment (days or date): _____

D. ☐ Increase ☐ Decrease ☐ No Change
of this Change Order:

Substantial Completion (days or date): _____

Ready for Final Payment (days or date): _____

E. Contract Times incorporating this Change Order (Lines C+D):

Substantial Completion (days or date): _____

Ready for Final Payment (days or date): _____

Recommended for Approval by Remediation Engineer:

Signature: _____ Date: _____

Accepted by NYSEG:

Signature: _____ Date: _____

Accepted by Remediation Contractor:

Signature: _____ Date: _____

END OF CHANGE ORDER

SECTION 01 29 76

PROGRESS PAYMENT PROCEDURES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. This Section includes administrative and procedural requirements for the Remediation Contractor's requests for progress payments.

1.02 PROGRESS PAYMENTS

A. General:

1. Applications for Payment shall be submitted on a form acceptable to NYSEG and Remediation Engineer.

B. Procedure:

1. Review with Remediation Engineer the proposed quantities and Work to be included in each progress payment. Application for Payment shall cover only the quantities and Work recommended by the Remediation Engineer.
2. Submit to the NYSEG and the Remediation Engineer complete Application for Payment and other documents to accompany the Application for Payment.

C. Each request for progress payment shall include:

1. Completed Application for Payment form, including summary/signature page, progress estimate sheets, and stored materials summary. Progress estimate sheets shall have the same level of detail as the Bid Form.
2. Remediation Engineer-approved quantity survey sheets, sketches, receipts, or other appropriate supporting documentation to substantiate proposed quantities and Work.
3. For payment requests that include payment for Work under an allowance, submit documentation acceptable to NYSEG and Remediation Engineer of the authorization of allowance Work.
4. For payment requests (other than request for final payment) that include reduction or payment of retainage in an amount greater than that required in the Contract Documents, submit on form acceptable to NYSEG and Remediation Engineer consent of surety to partial release or reduction of retainage.

D. Requirements for request for final payment are specified in the Section 01 77 19 - Closeout Procedures.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 31 13

PROJECT COORDINATION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. This Section includes general requirements for coordinating construction operations on the Project.

1.02 COORDINATION

- A. Remediation Contractor shall coordinate the Work, including testing agencies, whether hired by Remediation Contractor, NYSEG, or others, Subcontractors, Suppliers, and others with whom coordination is necessary, in accordance with this Section, to complete the Work in accordance with the Contract Documents.
- B. Remediation Contractor shall cooperate with and coordinate the Work with other contractors, utility service companies, NYSEG's employees working at the site, and other entities working at the site, in accordance with Section 01 11 00 - Summary of Work.
- C. Coordinate construction operations included in different Sections of the Specifications to ensure efficient and orderly installation of each part of the Work. Coordinate construction operations included in different Sections that depend on each other for proper installation, connection, and operation.
1. Schedule construction operations in sequence required to obtain the best results where installation of one part of the Work depends on installation of other components, before or after its own installation.
 2. Coordinate installation of different components to ensure maximum performance and accessibility for required maintenance, service, and repair.
 3. Make adequate provisions to accommodate items scheduled for later installation.
- D. Coordinate scheduling and timing of required administrative procedures with other construction activities to avoid conflicts and to ensure orderly progress of the Work. Such administrative activities include, but are not limited to, the following:
1. Preparation of Remediation Contractor's Progress Schedule.
 2. Installation and removal of temporary utilities, facilities, and controls.
 3. Delivery and processing of submittals.
 4. Progress meetings.
 5. Startup and adjustment of systems.
 6. Project closeout activities.
- E. Coordinate construction activities to ensure that operations are carried out with consideration given to conservation of energy, water, and materials. Coordinate use of temporary utilities to minimize waste.

- F. Maintain sufficient competent personnel, drafting and CADD equipment (as necessary), and supplies at the site for preparing, coordination drawings, and record documents. With the Contract Documents and Shop Drawings, use such coordination drawings as tools for coordinating the Work of various trades. Where such coordination drawings are to be prepared by Subcontractors, ensure that each Subcontractor maintains required personnel and facilities at the site.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 31 19.13

PRE-CONSTRUCTION CONFERENCE

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. Attending a pre-construction conference(s) and being prepared to discuss all items on the agenda.
 - 2. Remediation Engineer will distribute an agenda, preside at meeting, and prepare and distribute minutes to all meeting participants and others as requested.
- B. Purpose of the meeting(s) is to designate responsible personnel, establish working relationships, discuss preliminary schedules submitted by Remediation Contractor, and review administrative and procedural requirements for the Project. Matters requiring coordination will be discussed and procedures for handling such matters will be established.
- C. Date, Time, and Location: The Pre-Construction Conference will be held within 20 days after the Contract Times start to run and before Work starts at the site, unless otherwise specified by NYSEG and agreed to by the Remediation Contractor. NYSEG will establish the date, time, and location of meeting and will notify the interested and involved parties.
- D. Prior to the meeting(s), the Remediation Contractor shall submit the following preliminary schedules:
 - 1. Preliminary Progress Schedule.
 - 2. Preliminary Schedule of Submittals.
- E. Providing information required and contributing appropriate items for discussion. Remediation Contractor shall bring to the meeting the following, with sufficient number of copies for each attendee:
 - 1. Preliminary Progress Schedule.
 - 2. Preliminary Schedule of Submittals.
 - 3. List of emergency contact information for the Remediation Contractor's project manager, field superintendent, site health and safety officer, field engineer, and foreman.

1.02 ATTENDANCE

- A. Representatives present for each entity shall be qualified and authorized to act on that entity's behalf.
- B. Attendance:
 - 1. Remediation Contractor:
 - a. Project manager.
 - b. Field superintendent.
 - c. Site health and safety officer.
 - d. Field engineer.
 - e. Foreman.
 - 2. NYSEG.
 - 3. Remediation Engineer.

4. New York State Department of Environmental Conservation (NYSDEC) and New York State Department of Health (NYSDOH), if available.
5. Village of Clyde and/or County of Wayne, if available.
6. Others as requested by NYSEG, Remediation Contractor, or Remediation Engineer.

1.03 PRELIMINARY AGENDA

A. Safety Moment

B. Procedural and Administrative:

1. Personnel and Teams:
 - a. Designation of roles and responsible personnel.
 - b. Limitations of authority of personnel, including personnel who will sign Contract modifications and make binding decisions.
 - c. List of proposed Subcontractors and Suppliers.
 - d. Authorities having jurisdiction.
2. Procedures for communication and correspondence.
3. Copies of Contract Documents and availability.
4. The Work and Scheduling:
 - a. Scope of Work.
 - b. Contract Times, including Milestones (if any).
 - c. Phasing and sequencing.
 - d. Preliminary Progress Schedule.
 - e. Critical path activities.
 - f. Working hours.
5. Safety:
 - a. Responsibility for safety.
 - b. Designation of Remediation Contractor's safety representative.
 - c. Identify Project Emergency Coordinator (PEC).
 - d. Emergency procedures and accident reporting.
 - e. Emergency contact information.
 - f. Impact of Project on public safety.
6. Permits.
7. Coordination:
 - a. Project coordination.
 - b. Progress meetings.
8. Products and Submittals:
 - a. Preliminary Schedule of Submittals.
 - b. Shop Drawings, Samples, and other submittals.
 - c. Product options, "or equals", and substitutions.
9. Contract Modification Procedures:
 - a. Requests for interpretation.
 - b. Clarification notices.
 - c. Field Orders.
 - d. Proposal requests.
 - e. Change Order proposals.
 - f. Work Change Directives.
 - g. Change Orders.
10. Payment:
 - a. Progress payment procedures.
 - b. Taxes.
 - c. Retainage.
11. Testing and inspections.

12. Record documents.
 13. Preliminary Discussion of Contract Closeout:
 - a. Procedures for Substantial Completion.
 - b. Contract closeout requirements.
 - c. Correction period.
 - d. Duration of bonds and insurance.
- C. Site Mobilization:
1. Field offices and staging areas.
 2. Temporary facilities and utilities.
 3. Access to site, access roads, and parking.
 4. Use of premises.
 5. Protection of existing property.
 6. Security.
 7. Temporary Controls:
 - a. Erosion and sediment control.
 - b. Storm water control.
 - c. Odor, vapor, and dust control.
 - d. Noise control.
 - e. Temporary containment system.
 - f. Pollution control.
 8. Temporary fencing.
 9. Storage of materials and equipment.
 10. Reference points and benchmarks; surveys and layouts.
 11. Site maintenance and housekeeping during the Project, including cleaning and removal of trash and debris.
 12. Soil removal and handling.
 13. Soil cover construction.
 14. On-site temporary water treatment.
 15. Restoration.
- D. General discussion and questions.
- E. Next meeting.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 31 19.23

PROGRESS MEETINGS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. Attending progress meetings to be held on a regular basis throughout the Project and being prepared to discuss in detail all items on the agenda.
 - 2. Remediation Engineer will preside at progress meetings and will prepare and distribute minutes of progress meetings to all meeting participants and others as requested.
- B. Date and Time:
 - 1. Regular Meetings: Every week on a day and time agreeable to NYSEG, Remediation Engineer, and Remediation Contractor.
 - 2. Pre-Final Inspection: To be held at least 14 calendar days prior to completion of construction and include the New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH; as needed), NYSEG, Remediation Engineer, and Remediation Contractor.
 - 3. Final Inspection and Close-Out Meeting: To be held within 90 calendar days after completion of construction and include the NYSDEC, NYSDOH (as needed), NYSEG, Remediation Engineer, and Remediation Contractor.
 - 4. Other Meetings: As required.
- C. Location: Remediation Contractor's field office at the site or other location mutually agreed upon by NYSEG, Remediation Engineer, and Remediation Contractor.
- D. Handouts: Provide to the Remediation Engineer in electronic format one day prior to each scheduled progress meeting the following:
 - 1. List of Work accomplished since the previous progress meeting.
 - 2. Up-to-date Progress Schedule.
 - 3. Up-to-date Schedule of Submittals.
 - 4. Detailed "look-ahead" schedule of Work planned for the next two weeks, with specific starting and ending dates for each activity, including shutdowns, deliveries of important materials and equipment, Milestones (if any), and important activities affecting NYSEG, the Project, and the site.

Remediation Contractor to also bring a minimum of five hard copies of the above items to each progress meeting. This quantity may be reduced based on routine attendees and at the request of the Remediation Engineer.

1.02 ATTENDANCE

- A. Representatives present for each entity shall be qualified and authorized to act on that entity's behalf.
- B. Attendance:
 - 1. Remediation Contractor:
 - a. Project manager.
 - b. Site superintendent.
 - c. Site health and safety officer.

- d. Field engineer.
- e. Foreman.
- f. Representatives of other Subcontractors and Suppliers when needed for the discussion of an agenda item.
- 2. NYSEG.
- 3. Remediation Engineer.
 - a. Project Manager
 - b. Construction Manager
 - c. Air Monitoring Technician
- 4. NYSDEC, NYSDOH, and Village of Clyde and/or County of Wayne, if available.
- 5. Others as appropriate.

1.03 PRELIMINARY AGENDA

- A. Review, comment, and amendment (if required) of minutes of previous progress meeting.
- B. Safety and safe work practices.
- C. Results of community air monitoring performed since previous progress meeting.
- D. Review of progress since previous progress meeting.
- E. Planned progress through next progress meeting.
- F. Review of Progress Schedule:
 - 1. Contract Times, including Milestones (if any).
 - 2. Critical path.
 - 3. Schedules for fabrication and delivery of materials and equipment.
 - 4. Issues potentially affecting the Contract Times, including Milestones (if any).
 - 5. Corrective measures, if required, to achieve Contract Times, including Milestones (if any).
- G. Submittals:
 - 1. Status of critical submittals.
 - 2. Review of Schedule of Submittals and Remediation Engineer's submittal log.
- H. Field observations, problems, and conflicts.
- I. Quality standards, testing, and inspections.
- J. Coordination between parties.
- K. Site management issues, including access, security, temporary controls, maintenance and protection of traffic, and housekeeping.
- L. Permits.
- M. Punch list status, as applicable.
- N. Other business.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 32 16

CONSTRUCTION PROGRESS SCHEDULE

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. The Remediation Contractor shall prepare, submit, maintain, and update Progress Schedules in accordance with this Section, unless otherwise accepted by NYSEG.
2. The NYSEG's acceptance of the Progress Schedule, and comments or opinions concerning the activities in the Progress Schedule shall not control the Remediation Contractor's independent judgment relative to the means, methods, techniques, sequences, and procedures of construction. The Remediation Contractor is solely responsible for complying with the Contract Times.
3. If the Progress Schedule reflects completion date(s) different than the Contract Times, the Contract Times are not thereby voided, nullified, or affected. The Contract Times govern. Where the Progress Schedule reflects completion date(s) that are earlier than the Contract Times, NYSEG may accept such Progress Schedule with Remediation Contractor to specifically understand that no Claim for additional Contract Times or additions to the Contract Price shall be brought against NYSEG resulting from Remediation Contractor's failure to complete the work by the earlier date(s) indicated on the accepted Progress Schedule.

B. Factors Affecting the Progress Schedule

1. In preparing the Progress Schedule, take into consideration submittal requirements and submittal review times, time for fabricating and delivering materials and equipment, work by subcontractors, availability and abilities of workers, availability of construction equipment, weather conditions, restrictions in operations at the site and coordination with the NYSEG's operations, if any, and other factors that have the potential to affect completion of the work within the Contract Times.
2. Comply with sequencing requirements, if any, indicated in the Contract Documents.

1.02 SUBMITTALS

A. Informational Submittals

1. Preliminary Progress Schedule: Submit preliminary Progress Schedule in accordance with this Section.
2. Initial Progress Schedule: After making revisions in accordance with NYSEG's and/or Remediation Engineer's comments on the preliminary Progress Schedule, submit Initial Progress Schedule in accordance this Section.
3. Progress Schedule Updates:
 - a. Submit updated Progress Schedule at each progress meeting. Bring to meeting the minimum number of copies specified in Section 01 31 19.23 - Progress Meetings.
 - b. Submit each updated Progress Schedule with letter of transmittal complying with requirements of Section 01 33 00 - Submittal Procedures, and specifically indicating the following:
 - 1) Listing of activities and dates that have changed since the previous Progress Schedule submittal.
 - 2) Discussion of problems causing delays, anticipated duration of delays, and proposed countermeasures.
 - 3) Completed activities, if any, and the anticipated and actual durations of each.

- c. If the Progress Schedule remains unchanged from one progress meeting to the next, submit a written statement to that effect.
4. Look-Ahead Schedules: Submit two-week look-ahead schedule at each progress meeting.
5. Recovery Schedules: Submit in accordance with this Section.

1.03 PROGRESS SCHEDULES

A. Format

1. Type: Gantt chart prepared using Microsoft Project 2007 or later edition, Primavera P6, or similar scheduling software.
2. Sheet Size: 22 inches by 34 inches, unless otherwise accepted by NYSEG.
3. Time Scale: Indicate first date of each work week.
4. Organization:
 - a. Group deliveries of materials and equipment into a separate sub-schedule that is part of the Progress Schedule.
 - b. Group construction into a separate sub-schedule (that is part of the Progress Schedule) by activity.
 - c. Group Work by Subcontractors into a separate sub-schedule (that is part of the Progress Schedule) by activity.
 - d. Group critical activities that dictate the rate of progress (the "critical path") into a separate sub-schedule that is part of the Progress Schedule. Clearly indicate the critical path on the Progress Schedule.
 - e. Organize each sub-schedule by Specification Section or payment item number.
5. Activity Designations: Indicate title and related Specification Section or payment item number.

B. Content

1. At a minimum, the following major work items should be included, with appropriate subtasks included as necessary, in the general sequence listed below:
 - a. Mobilization.
 - b. Site Preparation.
 - c. Excavation, including material handling, transportation and staging approach.
 - d. Excavation Support.
 - e. Backfilling.
 - f. Soil Cover Construction.
 - g. Site Restoration.
 - h. Demobilization.
2. Progress Schedules shall also indicate the following:
 - a. Dates for shop-testing.
 - b. Delivery dates for materials and equipment to be incorporated into the Work.
 - c. Dates for beginning and completing each phase of the Work by activity and by trade.
 - d. Dates for start-up, check-out, and field-testing.
 - e. Dates corresponding to the Contract Times, and planned completion date associated with each Milestone (if any), Substantial Completion, and readiness for final payment.

- C. Progress Schedule Updates: Update Progress Schedule on a bi-weekly basis (i.e., every two weeks) and to reflect changes to the Contract Times, if any.

1.04 RECOVERY SCHEDULES

A. General

1. When updated Progress Schedule indicates that the ability to comply with the Contract Times falls two or more weeks behind schedule, and there is no excusable delay,

Change Order, or Work Change Directive to support an extension of the Contract Times, Remediation Contractor shall prepare and submit a Progress Schedule demonstrating Remediation Contractor's plan to accelerate the work to achieve compliance with the Contract Times ("recovery schedule") for NYSEG's acceptance.

2. Submit recovery schedule within three days after submittal of updated Progress Schedule where need for recovery schedule is indicated.

B. Implementation of Recovery Schedule

1. At no additional cost to NYSEG, do one or more of the following: furnish additional labor, provide additional construction equipment, provide suitable materials, employ additional work shifts, expedite procurement of materials and equipment to be incorporated into the Work, and other measures necessary to complete the Work within the Contract Times.
2. Upon acceptance of recovery schedule by NYSEG, incorporate recovery schedule into the next Progress Schedule update.

- C. Lack of Action: Remediation Contractor's refusal, failure, or neglect to take appropriate recovery action, or to submit a recovery schedule, shall constitute reasonable evidence that Remediation Contractor is not prosecuting the work or separable part thereof with the diligence that will ensure completion within the Contract Times.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 32 26

CONSTRUCTION PROGRESS REPORTING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. Remediation Contractor shall prepare and submit construction progress reports in accordance with this Section.
 - 2. Construction progress reports include:
 - a. Daily construction reports.
 - b. Field condition reports.

1.02 SUBMITTALS

- A. Informational Submittals:
 - 1. Daily Construction Reports: Submit in accordance with Article 1.03 of this Section.
 - 2. Field Condition Reports: Submit in accordance with Article 1.04 of this Section.

1.03 DAILY CONSTRUCTION REPORTS

- A. Prepare daily construction reports throughout the Project. Include in each report, at a minimum, the following:
 - 1. Remediation Contractor's name.
 - 2. Owner's name (NYSEG).
 - 3. Project name.
 - 4. Site name and location.
 - 5. Date and day of the week.
 - 6. High and low temperatures and general weather conditions.
 - 7. Number of Remediation Contractor employees at the site.
 - 8. Number of employees at the site for each Subcontractor.
 - 9. Breakdown of employees by trades.
 - 10. Major construction equipment used.
 - 11. Material and equipment deliveries.
 - 12. Waste shipments.
 - 13. Meter readings and similar recordings.
 - 14. Work performed, including field quality control measures and testing.
 - 15. Location of areas in which construction was performed.
 - 16. Major equipment and materials installed as part of the Work.
 - 17. Services connected and disconnected.
 - 18. Equipment or system tests and startups.
 - 19. Stoppages, delays, shortages, and losses.
 - 20. Accidents. Comply with accident reporting requirements of Section 01 35 29 – Remediation Contractor's Health and Safety Plan.
 - 21. Emergency procedures.
 - 22. Meetings and significant decisions.
 - 23. Orders and requests of authorities having jurisdiction.
 - 24. Change Orders received and implemented.
 - 25. Work Change Directives received and implemented.
 - 26. Field Orders received and implemented.

- 27. Request for Information (RFI) and clarifications submitted.
- 28. Other instructions received from NYSEG or Remediation Engineer.

- B. Submit daily construction reports to Remediation Engineer by 9:00 a.m. the next working day after the day covered in the associated report. Daily report shall be signed by responsible member of Remediation Contractor's staff, such as Remediation Contractor's project manager, field superintendent, field engineer, or foreman designated by Remediation Contractor as having authority to sign daily reports.

1.04 FIELD CONDITION REPORTS

- A. Immediately upon discovery of a difference between field conditions and the Contract Documents, prepare and submit a detailed report. Include a detailed description of the differing conditions, together with recommendations for changing the Contract Documents.
- B. Submit field condition reports to Remediation Engineer with request for interpretation, prepared in accordance with Section 01 26 00 - Contract Modification Procedures.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 33 00

SUBMITTAL PROCEDURES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. This Section specifies the general methods and requirements of submissions applicable to Remediation Contractor submittals, including plans, shop drawings, product data, samples, mock-ups, and schedules. Detailed and specific submittal requirements are provided elsewhere in the Specifications and are summarized in the submittal log form included with this Section.
2. Provide submittals well in advance (as indicated in this Section) of the need for the material, equipment, or procedure (as applicable) in the Work and with ample time required for delivery of material or equipment and to implement procedures following Remediation Engineer's review or acceptance of the associated submittal. Work covered by a submittal will not be included in progress payments until review or acceptance of related submittals has been obtained in accordance with the Contract Documents.
3. Remediation Contractor is responsible for dimensions to be confirmed and corrected at the site, for information pertaining solely to the fabrication processes and to techniques of construction, and for coordinating the work of all trades. Remediation Contractor's signature of submittal's stamp and letter of transmittal shall be Remediation Contractor's representation that Remediation Contractor has met its obligations under the Contract Documents relative to that submittal.

B. Samples:

1. Conform submittal of Samples to the Specification Section in which the Sample is specified.
2. Furnish at the same time Samples and submittals that are related to the same unit of Work or Specification Section. Remediation Engineer will not review submittals without associated Samples, and will not review Samples without associated submittals.
3. Samples shall clearly illustrate functional characteristics of product, all related parts and attachments, and full range of color, texture, pattern, and material.

- C. Each submittal shall be prepared and transmitted to the Remediation Engineer a minimum of 10 working days in advance of the Remediation Contractor's intended performance of the related Work or other applicable activities, or within the time specified in the individual Work of other related Sections, so that Work will not be delayed by processing times (including rejections and resubmittals, if required), coordination with other submittals, testing, purchasing, fabrication, delivery, and similar sequenced activities. NYSEG and/or Remediation Engineer will not be liable for any expense and/or delay resulting from the Remediation Contractor's failure to provide submittals in a timely manner.

- D. The Remediation Engineer shall forward select submittals to New York State Department of Environmental Conservation (NYSDEC) for review, as requested by NYSDEC.

1.02 TYPES OF SUBMITTALS

- A. Submittals are classified as Action Submittals, Informational Submittals, Closeout Submittals, and Maintenance Material Submittals. The type of each required submittal is designated in

the respective Specification Sections. When type of submittal is not specified in the associated Specification Section, submittal will be classified as follows:

1. Action Submittals include:
 - a. Shop Drawings.
 - b. Product data.
 - c. Delegated design submittals, which include documents prepared, sealed, and signed by a design professional retained by Remediation Contractor, Subcontractor, or Supplier for materials and equipment to be incorporated into the completed Work. Delegated design submittals do not include submittals related to temporary construction unless specified otherwise in the related Specification Section. Delegated design submittals include design drawings, design data including calculations, specifications, certifications, and other submittals prepared by such design professional.
 - d. Samples.
 - e. Testing plans, procedures, and testing limitations.
 2. Informational Submittals include:
 - a. Certificates.
 - b. Design data not sealed and signed by a design professional retained by Remediation Contractor, Subcontractor, or Supplier.
 - c. Pre-construction test and evaluation reports, such as reports on pilot testing, subsurface investigations and similar reports.
 - d. Supplier instructions, including installation data, and instructions for handling, starting-up, and troubleshooting.
 - e. Source quality control submittals (other than testing plans, procedures, and testing limitations), including results of shop testing.
 - f. Field quality control submittals (other than testing plans, procedures, and testing limitations), including results of operating and acceptability tests at the site.
 - g. Supplier reports.
 - h. Sustainable design submittals (other than sustainable design closeout documentation).
 - i. Special procedure submittals, including health and safety plans and other procedural submittals.
 - j. Qualifications statements.
 3. Closeout Submittals include:
 - a. Maintenance contracts.
 - b. Operations and maintenance data.
 - c. Bonds, such as maintenance bonds and bonds for a specific product or system.
 - d. Warranty documentation.
 - e. Record documentation.
 - f. Sustainable design closeout documentation.
 - g. Software.
 4. Maintenance Material Submittals include:
 - a. Spare parts.
 - b. Extra stock materials.
 - c. Tools.
 5. When type of submittal is not specified and is not included in the list above, Remediation Engineer will determine the type of submittal.
- B. Not Included in this Section: Administrative and procedural requirements for the following are covered elsewhere in the Contract Documents:
1. Requests for interpretations and clarifications of the Contract Documents.
 2. Field Orders, Work Change Directives, and Change Orders.
 3. Applications for Payment.
 4. Progress Schedules.

5. Progress reports.
6. Photographic documentation.
7. Reports and documentation required in accordance with applicable permits.
8. Site survey data.

1.03 SUBMITTALS REQUIRED IN THIS SECTION

A. Informational Submittals:

1. Schedule of Submittals:

- a. Timing:
 - 1) Provide submittal within time frames specified in Attachment A – Submittal Log.
 - 2) Provide updated Schedule of Submittals with each submittal of the updated Progress Schedule.
- b. Content: Requirements for content of preliminary Schedule of Submittals and subsequent submittals of the Schedule of Submittals are identical. Identify on Schedule of Submittals all submittals required in the Contract Documents. Updates of Schedule of Submittals shall show scheduled dates and actual dates for completed tasks. Indicate submittals that are on the Project's critical path. Indicate the following for each submittal:
 - 1) Date by which submittal will be provided to Remediation Engineer.
 - 2) Whether submittal will be for a substitution or "equal".
 - 3) Date by which Remediation Engineer's response is required. At least 10 working days shall be allowed from Remediation Engineer's receipt of each submittal. Allow increased time, upwards of 20 working days, for large or complex submittals.
 - 4) For submittals for materials or equipment, date by which material or equipment must be at the site to avoid delaying the Work and to avoid delaying the work of other contractors.
- c. Prepare Schedule of Submittals using same software, and in same format, specified for Progress Schedules.
- d. Coordinate Schedule of Submittals with the Progress Schedule.
- e. Schedule of Submittals that is not compatible with the Progress Schedule, or that does not indicate submittals on the Project's critical path, or that places extraordinary demands on Remediation Engineer for time and resources, is unacceptable. Do not include submittals not required by the Contract Documents.
- f. In preparing Schedule of Submittals:
 - 1) Considering the nature and complexity of each submittal, allow sufficient time for review and revision.
 - 2) Reasonable time shall be allowed for Remediation Engineer's review and processing of submittals, for submittals to be revised and resubmitted, and for returning submittals to Remediation Contractor.
 - 3) Identify and accordingly schedule submittals that are expected to have long anticipated review times and submittals that may be subject to review by NYSDEC or other authorities having jurisdiction.

1.04 PROCEDURE FOR SUBMITTALS

A. Submittal Identification System: Use the following submittal identification system, consisting of submittal number and review cycle number.

1. Submittal number shall be separate and unique number correlating to each individual submittal required. Remediation Contractor shall assign submittal number as follows:
 - a. First part of submittal number shall be the applicable Specification Section number, followed by a hyphen.

- b. Second part of submittal number shall be a three-digit number (sequentially numbered from 001 through 999) assigned to each separate and unique submittal provided under the associated Specification Section.
 - c. Typical submittal number for the third submittal provided for Section 31 05 16 - Aggregates for Earthwork would be "31 05 16-003".
 - 2. Review cycle number shall be a letter designation indicating the initial submittal or re-submittal associated with each submittal number:
 - a. "A" = Initial (first) submittal.
 - b. "B" = Second submittal (i.e., first re-submittal).
 - c. "C" = Third submittal (i.e., second re-submittal).
 - 3. Typical submittal identification for the second submission (first re-submission) of the third submittal provided for Section 31 05 16 - Aggregates for Earthwork would be "31 05 16-003-B".
- B. Letter of Transmittal for Submittals:
 - 1. Provide separate letter of transmittal with each submittal. Each submittal shall be for one Specification Section.
 - 2. Each letter of transmittal shall contain the following:
 - a. Remediation Contractor's name.
 - b. Owner's name (NYSEG).
 - c. Project name.
 - d. Contract or Purchase Order number.
 - e. Transmittal number.
 - f. Submittal number and review cycle.
 - g. Submittal date and dates of any previous submissions.
 - h. Reference to appropriate Specification Section number, page, and paragraph(s).
 - i. Reference to appropriate Design Drawing sheet(s) and detail(s).
 - j. Clear space at least three inches by three inches in size for affixing Remediation Engineer's review stamp.
 - k. Clear space suitably sized for affixing Remediation Contractor's stamp.
 - 3. For submittals with proposed deviations from requirements of the Contract Documents, letter of transmittal shall specifically describe each proposed variation.
- C. Remediation Contractor's Review and Stamp:
 - 1. Remediation Contractor's Review: Before transmitting submittals to Remediation Engineer, review submittals to:
 - a. Ensure proper coordination of the Work.
 - b. Determine that each submittal is in accordance with Remediation Contractor's desires.
 - c. Verify that submittal contains sufficient information for Remediation Engineer to determine compliance with the Contract Documents.
 - 2. Incomplete or inadequate submittals will be returned without review.
 - 3. Remediation Contractor's Stamp and Signature:
 - a. Each submittal provided shall bear Remediation Contractor's stamp of approval and signature, as evidence that submittal has been reviewed by Remediation Contractor and verified as complete and in accordance with the Contract Documents.
 - b. Submittals without Remediation Contractor's stamp and signature will be returned without review.
 - c. Remediation Contractor's stamp shall contain the following certification statement:

"By this submittal, I hereby represent that I have determined and verified all field measurements, field construction criteria, materials, dimensions, catalog numbers, and similar data, and I have checked and coordinated each item with other applicable Shop Drawings and all Project requirements."

- D. Submittal Marking and Organization:
1. Mark each page of submittal, and each individual component submitted, with submittal number and applicable Specification paragraph.
 2. Arrange submittal information in same order as requirements are written in the associated Specification Section.
 3. Each Shop Drawing sheet shall have title block with complete identifying information satisfactory to Remediation Engineer.
 4. Package together submittals for the same Specification Section. Do not provide required information piecemeal.
- E. Format of Submittal and Recipients:
1. Action Submittals and Informational Submittals: Provide Action Submittals and Informational Submittals as electronic files in portable document format (PDF), except that submittals of Samples shall be as specified in Paragraph 1.04.E.2 of this Section.
 2. Samples:
 - a. Securely label or tag Samples with submittal identification number. Label or tag shall include clear space at least three inches by three inches in size for affixing Remediation Engineer's review stamp. Label or tag shall not cover, conceal, or alter appearance or features of Sample. Label or tag shall not be separated from the Sample.
 - b. Submit number of Samples required in Specifications. If number of Samples is not specified in the associated Specification Section, provide at least three identical Samples of each item required for Remediation Engineer's review. Samples will not be returned to Remediation Contractor. If Remediation Contractor requires Sample(s) for Remediation Contractor's use, notify Remediation Engineer in writing and provide additional Sample(s). Remediation Contractor is responsible for furnishing, shipping, and transporting additional Samples.
 - c. Deliver one Sample to Remediation Engineer's field office at the site. Deliver balance of Samples to Remediation Engineer's office, unless otherwise directed by Remediation Engineer.
 3. Closeout Submittals:
 - a. Provide the following Closeout Submittals as electronic files in PDF format:
 - 1) Maintenance contracts.
 - 2) Operations and maintenance data.
 - 3) Bonds for specific products or systems.
 - 4) Warranty documentation.
 - 5) Sustainable design closeout documentation.
 - b. Record Documentation: Submit in accordance with Section 01 78 39 - Project Record Documents.
 - c. Software: Submit number of copies required in Specification Section where the software is specified. If number of copies is not specified, provide two copies on compact disc in addition to software loaded on to NYSEG's computer(s) or microprocessor(s).
 4. Maintenance Material Submittals: For spare parts, extra stock materials, and tools, submit quantity of items specified in associated Specification Section.
- F. Distribution:
1. Remediation Engineer will distribute each reviewed submittal requiring Remediation Engineer's written response as electronic file in PDF format.
 2. Remediation Contractor shall distribute hardcopy reproductions of reviewed submittals, where required, to the job site file and elsewhere, as directed by Remediation Engineer. Number of hardcopies shall be as directed by Remediation Engineer, but will not exceed six.

- G. Resubmittals: Resubmittal requirements are provided in Article 1.05 of this Section.
- H. Remediation Engineer's Submittal Log:
 - 1. Remediation Engineer will maintain a log of required submittals using the form included with this Section. Updated submittal log will be provided to Remediation Contractor upon request.
 - 2. Review submittal log and status of each submittal with Remediation Engineer on a weekly or more frequent basis.
 - 3. Coordinate updates to Schedule of Submittals with Remediation Engineer's updates to submittal log.

1.05 REMEDIATION ENGINEER'S REVIEW

- A. Timing: Remediation Engineer's review will conform to timing accepted by Remediation Contractor in the accepted Schedule of Submittals.
- B. Submittals not required in the Contract Documents will not be reviewed by Remediation Engineer and will not be recorded in Remediation Engineer's Submittal Log. Hardcopies, if any, of such submittals will be returned to Remediation Contractor.
- C. Results of Remediation Engineer's Review:
 - 1. Action Submittals: Each submittal will be given one of the following dispositions:
 - a. Reviewed: Upon return of submittal marked "Reviewed", order, ship, or fabricate materials and equipment included in the submittal (pending Remediation Engineer's review or acceptance, as applicable, of source quality control submittals) or otherwise proceed with the Work in accordance with the submittal and the Contract Documents.
 - b. Reviewed and Noted: Upon return of submittal marked "Reviewed and Noted", order, ship, or fabricate materials and equipment included in the submittal (pending Remediation Engineer's review or acceptance, as applicable, of source quality control submittals) or otherwise proceed with the Work in accordance with the submittal and the Contract Documents, provided it is in accordance with corrections indicated.
 - c. Revise and Resubmit: Upon return of submittal marked "Revise and Resubmit", make the corrections indicated and re-submit to Remediation Engineer for review.
 - d. Rejected: This disposition indicates material or equipment that cannot be reviewed. Upon return of submittal marked "Rejected", repeat initial submittal procedure utilizing reviewable material or equipment.
 - 2. Informational Submittals:
 - a. Each submittal will be given one of the following dispositions:
 - 1) Accepted: Information included in submittal conforms to the applicable requirements of the Contract Documents, and is acceptable. No further action by Remediation Contractor is required relative to this submittal, and the Work covered by the submittal may proceed, and products with submittals with this disposition may be shipped or operated, as applicable.
 - 2) Not Accepted: Submittal does not conform to applicable requirements of the Contract Documents and is not acceptable. Revise submittal and re-submit to indicate acceptability and conformance with the Contract Documents.
 - b. The following types of Informational Submittals, when acceptable to Remediation Engineer, will not receive a written response from Remediation Engineer. Disposition as "Accepted" will be recorded in Remediation Engineer's Submittal Log. When submittals of the following are not acceptable, Remediation Engineer will provide written response to Remediation Contractor:
 - 1) Safety data sheets.
 - 2) Manifests and other shipping documents.

- 3) Delivery tickets.
 - 4) Compaction testing reports.
 - 5) Concrete testing reports.
 - 6) Manufacturer's instructions.
3. Closeout Submittals: Dispositions and meanings are the same as specified for Informational Submittals. When acceptable, Closeout Submittals will not receive a written response from Remediation Engineer. Disposition as "Accepted" will be recorded in Remediation Engineer's Submittal Log. When Closeout Submittal is not acceptable, Remediation Engineer will provide written response to Remediation Contractor.
 4. Maintenance Material Submittals: Dispositions and meanings are the same as specified for Informational Submittals. When acceptable, Maintenance Material Submittals will not receive a written response from Remediation Engineer. Disposition as "Accepted" will be recorded in Remediation Engineer's Submittal Log. When Maintenance Material Submittal is not acceptable, Remediation Engineer will provide written response to Remediation Contractor, and Remediation Contractor is responsible for costs associated with transporting and handling of maintenance materials until compliance with the Contract Documents is achieved.

PART 2– PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 ATTACHMENTS

- A. The form listed below, which follows after the "End of Section" designation, is part of this Specification Section:
 1. Attachment A: Submittal Log form (2 pages).

END OF SECTION

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Table 1
Specification Section 01 33 00A - Remediation Engineer's Submittal Log

NYSEG - Clyde Former MGP Site - Clyde, New York

| Submittal Reference No. | Specification / Document Reference | Submittal Description | Date Received | Review Conducted by: | | Interim Status/Date (see Note 1) | Final Status/Date (see Note 1) | Notes |
|----------------------------|---|---|------------------|----------------------|----------|--|--------------------------------------|-------|
| | | | | Project Manager | Engineer | | | |
| Section 01 14 13 | Site Security and Access | Shop Drawings - Locatoins of Temporary Fences and Gates | | | | | | |
| | | Product Data - Temporary Fences, Gates, and Privacy Screens | | | | | | |
| | | Security Plan | | | | | | |
| Section 01 15 00 | Remediation Contractor's Project Operation Plan (POP) | Remediation Contractor's Project Operation Plan | | | | | | |
| Section 01 26 00 | Contractor Modification Procedures | Contract Modifications (as necessary) | | | | | | |
| | | Request for Interpretation (as necessary) | | | | | | |
| | | Work Change Directive (as necessary) | | | | | | |
| | | Change Order Request (as necessary) | | | | | | |
| Section 01 29 76 | Progress Payment Procedures | Application for Payment | | | | | | |
| Section 01 31 19.13 | Pre-Construction Meetings | Preliminary Progress Schedule | | | | | | |
| | | Preliminary Schedule of Submittals | | | | | | |
| Section 01 31 19.23 | Progress Meetings | Status of critical submittals | | | | | | |
| | | Review of Schedule of Submittals and Engineer's Submittal Log | | | | | | |
| | | Preliminary Progress Schedule (same as for Section 01 31 19.13) | | | | | | |
| Section 01 32 16 | Construction Progress Schedule | Initial Progress Schedule | | | | | | |
| | | Progress Schedule Updates (as necessary) | | | | | | |
| | | Look-Ahead Schedule | | | | | | |
| | | Recovery Schedules (as necessary) | | | | | | |
| Section 01 32 26 | Construciton Progress Reporting | Daily Construction Reports | | | | | | |
| | | Field Condition Reports | | | | | | |
| Section 01 35 29 | Remediation Contractor's Health and Safety Plan (HASP) | Remediation Contractor's HASP | | | | | | |
| | | Qualification Statements (for HASP preparer and Safety representative) | | | | | | |
| | | Accident Reports | | | | | | |
| | | Daily Health and Safety Field Reports | | | | | | |
| | | Training Certificates | | | | | | |
| Section 01 35 43.13 | Environmental Procedures for Hazardous Materials | Hazardous Materials Proposed for Use for the Project | | | | | | |
| | | Hazardous Materials Generated at the Site | | | | | | |
| | | Permits (for storing, handling, using, transporting, and disposing of Hazardous Materials) | | | | | | |
| | | Hazardous Materials Communication Plan | | | | | | |
| | | Other Documents required for the Hazardous Materials Management Plan (see specification) | | | | | | |
| Section 01 35 49 | Community Air Monitoring Plan | Weekly Air Monitoring Reports | | | | | | |
| | | Daily Air Monitoring Exceedance Reports (if applicable) | | | | | | |
| | | Community air monitoring and weather data | | | | | | |
| Section 01 41 26 | Storm Water Pollution Prevention Plan (SWPPP) and Permit | Storm Water Permit Certification Statement | | | | | | |
| | | Qualifications Statement - Inspector | | | | | | |
| | | Storm Water Inspection Reports | | | | | | |
| Section 01 52 13 | Field Offices and Sheds | Field Office submittal: site plan, utility providers, and product data for printer and phone system | | | | | | |
| Section 01 53 53 | Temporary Water Treatment and Management | Shop Drawings - Waste Water Treatment System | | | | | | |
| | | Operation and Maintenance Manual | | | | | | |
| Section 01 57 00 | Temporary Controls | Erosion and Sediment Control Plan | | | | | | |
| | | Surface Water Control Plan | | | | | | |
| | | Odor, Dust, and Vapor Control Plan | | | | | | |
| | | Pollution Control Plan | | | | | | |
| | | Noise Control Plan | | | | | | |
| | | Product Data - Silt Fencing | | | | | | |
| | | Product Data - Erosion Control Mats/Netting, and Staples or Anchoring Stakes | | | | | | |
| | | Product Data - Vapor Mitigation agents and Proposed application and Storage Equipment for each | | | | | | |
| Section 01 58 13 | Temporary Project Signage | Shop Drawings - Project Signs | | | | | | |
| Section 01 62 00 | Product Options | "Or equal" request for approval statement, product data and shop drawings (as necessary) | | | | | | |
| Section 01 65 00 | Product Delivery Requirements | Related shop drawings | | | | | | |
| | | Manufacturers instructions for storing, handling and installing | | | | | | |
| | | Results of Source Quality Control Testing | | | | | | |
| Section 01 71 23 | Field Engineering | Procedure Submittals for planning of survey work | | | | | | |
| | | Survey Field Books (example and final) | | | | | | |
| | | Qualification Statements (field engineer, surveyor) | | | | | | |
| | | Certificates | | | | | | |
| Section 01 74 19 | Construction Waste Management and Disposal | Optical Survey Notes and Data | | | | | | |
| | | Waste Management Plan | | | | | | |
| | | Waste Profiles | | | | | | |
| Section 01 77 19 | Closeout Procedures | Disposal Records | | | | | | |
| | | Work Completion Documentation - Actual excavated volumes | | | | | | |
| | | Work Completion Documentation - Actual backfill volumes | | | | | | |
| | | Work Completion Documentation - Construction Drawings | | | | | | |
| | | Work Completion Documentation - Certified survey data | | | | | | |
| | | Work Completion Documentation - Executed warranties | | | | | | |
| | | Work Completion Documentation - Bills of lading and/or waste manifests | | | | | | |
| | | Work Completion Documentation - Certified weigh slips from disposal facility | | | | | | |
| | | Work Completion Documentation - Maintenance Agreements | | | | | | |
| | | Work Completion Documentation - Inspection certificates | | | | | | |
| | | Truck Volume Counts | | | | | | |
| | | Written Request for Inspection for Substantial Completion | | | | | | |
| | | Request for Payment | | | | | | |
| | | Certification that Punch-List Items have been Completed (as necessary) | | | | | | |

Table 1
Specification Section 01 33 00A - Remediation Engineer's Submittal Log
NYSEG - Clyde Former MGP Site - Clyde, New York

| Submittal Reference No. | Specification / Document Reference | Submittal Description | Date Received | Review Conducted by: | | Interim Status/Date (see Note 1) | Final Status/Date (see Note 1) | Notes |
|----------------------------|---|--|------------------|----------------------|----------|--|--------------------------------------|-------|
| | | | | Project Manager | Engineer | | | |
| Section 01 78 39 | Project Record Documents | Record Documents (see specification) | | | | | | |
| Section 02 21 19 | Structural Surveys | Qualifications Statement - Professional Engineer | | | | | | |
| | | Notification of intended survey start | | | | | | |
| | | Survey Report | | | | | | |
| Section 02 41 00 | Demolition | Demolition and Removal Plan | | | | | | |
| | | Qualifications Statements | | | | | | |
| | | Notification of Intended Demolition Start | | | | | | |
| Section 02 51 00 | Decontamination | SDSs for all cleaning/decontamination solutions | | | | | | |
| Section 02 61 13 | Excavation and Handling of Contaminated Material | Product data - soil drying agent | | | | | | |
| | | Excavation Dewatering and Water Management Plan | | | | | | |
| | | Waste transporter permits | | | | | | |
| | | Written record of the O&M activities associated with the temporary wastewater treatment system | | | | | | |
| | | Waste profiles | | | | | | |
| | | Chain of Custody records | | | | | | |
| | | Disposal Records | | | | | | |
| Section 02 81 00 | Transportation and Disposal of Waste Materials | Proposed Disposal Facilities and Truck Routes | | | | | | |
| | | Waste Transporter Permits (same as specification 02 61 13) | | | | | | |
| | | Draft Waste Manifests | | | | | | |
| | | Daily Summary of Waste Materials Transported Offsite | | | | | | |
| | | Waste Disposal Certifications | | | | | | |
| Section 31 05 16 | Aggregates for Earthwork | Physical and Analytical Test Results | | | | | | |
| | | Product Data - Groundwater Amendment | | | | | | |
| | | Qualifications Statements - Remediation Contractor's Testing Laboratory | | | | | | |
| | | Qualifications Statements - Offsite fill sources | | | | | | |
| | | Material Delivery Tickets | | | | | | |
| Section 31 05 19.13 | Geotextiles for Earthwork | Product Data | | | | | | |
| Section 31 05 19.16 | Geomembranes for Earthwork | Certificates | | | | | | |
| | | Written certification of minimum test values | | | | | | |
| | | Manufacturer's standard warranty | | | | | | |
| | | QC test results | | | | | | |
| | | Remediation Contractor's written certification of field-delivered material | | | | | | |
| | | Lot and roll numbers | | | | | | |
| Section 31 09 13 | Geotechnical Instrumentation and Monitoring | Product data | | | | | | |
| | | Geotechnical Monitoring Reports | | | | | | |
| Section 31 23 00 | Excavation and Fill | Property Surveys | | | | | | |
| | | Excavation and Backfilling Plan | | | | | | |
| | | Excavation Dewatering Plan | | | | | | |
| | | Backfilling Test Reports | | | | | | |
| | | Quality Assurance Test Results | | | | | | |
| | | Survey of Excavation | | | | | | |
| | | Daily Logs of Dewatering, Storage, and Water Disposal | | | | | | |
| Section 31 23 18 | Water Handling and Treatment | Water Treatment Plan | | | | | | |
| Section 31 50 00 | Excavation Support and Protection | Waste Management Plan | | | | | | |
| | | Qualifications | | | | | | |
| | | Hydraulic Barrier Wall Installation Plan | | | | | | |
| | | Shoring Installation Plan | | | | | | |
| | | Soldier Pile and Lagging Mill Tests and Manufacturer's Data | | | | | | |
| | | Trench Shield Design | | | | | | |
| | | Hydraulic Barrier Wall Construction Submittals (see specification) | | | | | | |
| | | Shoring Construction Submittals (see specification) | | | | | | |
| Section 32 90 00 | Planting | Topsoil information | | | | | | |
| | | Analytical results | | | | | | |
| | | Lime Information | | | | | | |
| | | Fertilizer Information | | | | | | |
| | | Seed information | | | | | | |
| | | Hydroseeding information | | | | | | |
| | | Erosion control fabric data | | | | | | |

- Notes:**
- Submittal status nomenclature is as follows:
R - Reviewed
N - Reviewed and noted
S - Resubmit
J - Rejected
I - For your information
 - Refer to Referenced Specification for detailed submittal requirements

SECTION 01 35 29

REMEDIATION CONTRACTOR'S HEALTH AND SAFETY PLAN

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Remediation Contractor shall prepare and maintain a written, site-specific Health and Safety Plan (HASP), and conduct all construction activities in a safe manner that avoids:
 - a. Injuries to employees, Subcontractors, and other persons with an interest at or near the site.
 - b. Employee exposures to health hazards above occupational limits established respectively by the Occupational Safety and Health Administration (OSHA), American Conference of Governmental Industrial Hygienists (ACGIH), and Nuclear Regulatory Commission (NRC), as applicable.
 - c. Exposure of the public and NYSEG's employees to air contaminants above levels established for public exposure by United States Environmental Protection Agency (USEPA), NRC, New York State Department of Environmental Conservation (NYSDEC), New York State Department of Health (NYSDOH), and other authorities having jurisdiction at the site.
 - d. Significant increases in concentrations of contaminants in soil, water, or sediment near the site.
 - e. Violations of the Occupational Safety and Health Act, or other Laws or Regulations.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. HASP Preparer:

- a. Engage a certified industrial hygienist, accredited by the American Board of Industrial Hygiene, or safety professional certified by the Board of Certified Safety Professionals, to prepare or supervise preparation of Remediation Contractor's HASP.

2. Site Health and Safety Officer (SHSO):

- a. Engage a certified industrial hygienist, accredited by the American Board of Industrial Hygiene, or safety professional certified by the Board of Certified Safety Professionals, to manage, oversee, and enforce Remediation Contractor's health and safety program at the site, and ensure compliance with Remediation Contractor's HASP and applicable Laws and Regulations during the Project. Remediation Contractor's safety representative shall have a minimum of five years direct construction safety experience and appropriate training to supervise Hazardous Waste operations and emergency response (HAZWOPER) activities.
- b. Remediation Contractor's safety representative shall be present at the site at all times when Work is being performed and shall be dedicated solely to the supervision of Remediation Contractor's health and safety program.
- c. Responsibilities include, but are not necessarily limited to, the following:
 - 1) Supervising the implementation of Remediation Contractor's HASP.
 - 2) Providing health and safety orientation training to Remediation Contractor's employees, Subcontractors, and site visitors.
 - 3) Attending pre-construction conference, progress meetings, and other Project meetings, as required.

- 4) Preparing and maintaining health and safety records and statistics.
- 5) Leading and documenting daily job safety briefings. Hazards associated with the onsite electrical substation shall be discussed each day.
- 6) Preparing and submitting accident reports in accordance with Article 1.05 of this Section.
- 7) Leading accident investigations on Remediation Contractor's behalf.
- 8) Preparing and submitting daily health and safety field reports in accordance with Article 1.06 of this Section.

B. Regulatory Requirements:

1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 29 CFR 1904, Recording and Reporting Occupational Injuries and Illnesses.
 - b. 29 CFR 1910, Occupational Safety and Health Standards.
 - c. 29 CFR 1926, Safety and Health Regulations for Construction.
 - d. 40 CFR 261.3, 264, and 265, Resource Conservation and Recovery Act (RCRA).
 - e. 49 CFR 171.8, Transportation, Definitions and Abbreviations.
 - f. 6 NYCRR 371, Identification and Listing of Hazardous Wastes.
 - g. 6 NYCRR 375, Environmental Remediation Programs.
 - h. 12 NYCRR 23, Protection in Construction, Demolition, and Excavation Operations.
 - i. 12 NYCRR 57, High Voltage Proximity.
 - j. 12 NYCRR 59, Workplace Safety and Loss Prevention Program.
 - k. 12 NYCRR 61, Occupational Licensing and Certification.
 - l. 16 NYCRR 753, Protection of Underground Facilities.
 - m. 17 NYCRR 32, Oil Spill Prevention and Control – Actions to be Taken in Case of Discharge.

1.03 SUBMITTALS

A. Informational Submittals:

1. Remediation Contractor's HASP: Submit in accordance with Article 1.04 of this Section.
2. Qualifications Statements:
 - a. HASP Preparer: Submit name and qualifications of certified industrial hygienist or safety professional, including summary of experience and copy of valid certifications.
 - b. SHSO: Submit name and qualifications of safety representative, including summary of experience, training received, and copy of valid certifications applicable to the Project.
3. Reports:
 - a. Accident Reports: Submit in accordance with Article 1.05 of this Section.
 - b. Daily Health and Safety Field Reports: Submit in accordance with Article 1.06 of this Section.
4. Submit in accordance with Article 1.07 of this Section, the following valid training certificates:
 - a. Initial 40-hour HAZWOPER training.
 - b. Initial 24-hour HAZWOPER training.
 - c. Eight-hour HAZWOPER supervisor training.
 - d. Annual eight-hour HAZWOPER refresher training.
 - e. 10-hour construction safety training.

1.04 HASP SUBMITTAL

A. General:

1. Each employer working at the site shall develop and implement a written HASP for its employees involved in Hazardous Waste operations. HASP shall include procedures that will be used to ensure the safe handling of Hazardous Waste during excavating, loading, and transporting activities.
 2. Comply with 29 CFR 1904, 29 CFR 1910, 29 CFR 1926, 12 NYCRR 23, 12 NYCRR 56, 12 NYCRR 57, 12 NYCRR 59, 12 NYCRR 61, 17 NYCRR 32, and other Laws and Regulations.
 3. Include in HASP requirements for complying with NYSEG's health and safety requirements and site-specific hazard/emergency response plans, if any.
 4. HASP shall be kept at the site, shall address safety and health hazards of each phase of operations at the site, and shall include requirements and procedures for employee protection.
- B. HASP Contents: HASP shall address and include the following:
1. Organizational Structure:
 - a. Specific chain of command and overall responsibilities of supervisors and employees. Include the following:
 - 1) Designation of general supervisor who has responsibility and authority to direct all Hazardous Waste operations.
 - 2) Name of Remediation Contractor's SHSO who has responsibility and authority to implement and modify the HASP and verify compliance.
 - 3) Other personnel required for Hazardous Waste operations at the site and emergency response, and general functions and responsibilities of each.
 - 4) Lines of authority, responsibility, and communication.
 - b. Review and update organizational structure as necessary to reflect current status of site operations and personnel.
 2. Site description, background, and scope of Work.
 3. Safety and health risk or hazard analysis, and planned hazard controls, for each task and operation required to complete the Project.
 4. Site control measures, including:
 - a. Preventing trespassing.
 - b. Preventing unqualified or unprotected workers from entering restricted areas.
 - c. Preventing the "tracking" of contaminants out of the site.
 - d. Maintaining a log of employees at the site and visitors to the site.
 - e. Delineating exclusion, contamination reduction, and support zones.
 - f. Locating personnel and equipment decontamination zones.
 - g. Communicating routes of escape and gathering points.
 5. Training Program:
 - a. Initial training requirements for site workers and supervisors.
 - b. Exceptions to initial training requirements.
 - c. Site briefings for visitors and workers.
 - d. Refresher training requirements.
 - e. Certification of training for all Remediation Contractor and Subcontractor employees assigned to the Project.
 6. Medical Surveillance Program:
 - a. Provisions of the site medical surveillance program.
 - b. Communication protocols between the site, physicians, and workers.
 - c. Medical recordkeeping procedures.
 - d. Certification of medical clearance for all Remediation Contractor and Subcontractor employees assigned to the Project.
 7. Personal Protective Equipment (PPE):
 - a. PPE selection criteria.
 - b. Site- and task-specific PPE ensembles.

- c. Training in the use of PPE.
 - d. Respiratory protection.
 - e. Hearing conservation.
 - f. PPE maintenance and storage.
8. Exposure Monitoring Program:
 - a. Monitoring procedures to detect the presence of hazardous substances.
 - b. Monitoring procedures to determine worker exposures to hazardous substances and physical hazards.
 - c. Action levels and required responses for known and expected hazardous substances and physical hazards.
 - d. Calibration and maintenance procedures for monitoring equipment.
 9. Heat stress prevention program.
 10. Spill containment program. Comply with Section 01 35 43.13 - Environmental Procedures for Hazardous Materials.
 11. Decontamination Program:
 - a. Location and type of temporary decontamination facilities.
 - b. General and specific decontamination procedures for personnel and PPE.
 - c. General and specific decontamination procedures for equipment and vehicles.
 - d. Disposal of residual waste from decontamination.
 - e. Decontamination equipment and materials.
 - f. Monitoring procedures used to evaluate the effectiveness of decontamination.
 12. Emergency Response Plan:
 - a. Potential emergencies that may occur at the site.
 - b. Pre-emergency planning.
 - c. Onsite emergency response equipment, materials, and PPE.
 - d. Emergency Maps: Evacuation routes, gathering points, and route to nearest hospital.
 - e. Emergency roles and responsibilities.
 - f. Emergency alerting and evacuation procedures for site personnel.
 - g. Procedures for notifying, and list of emergency contact information for:
 - 1) Emergency responders, including fire officials, ambulance service, poison control, police, and local hospitals.
 - 2) Authorities having jurisdiction.
 - 3) NYSEG and Remediation Engineer.
 - 4) Remediation Contractor's project manager, site superintendent, SHSO, and foreman.
 - 5) Other entities, as required.
 - h. Emergency response procedures.
 - i. Emergency decontamination, medical treatment, and first-aid.
 - j. Emergency response training.
 13. Other standard operating procedures applicable to the Work.
- C. Submittal Procedure:
1. Submit HASP to Remediation Engineer the sooner of: seven days prior to pre-construction conference, or 30 days prior to Remediation Contractor's scheduled mobilization to the site.
 2. Remediation Engineer's review and acceptance of HASP will be only to determine if the topics covered in HASP comply with the Contract Documents. Remediation Engineer's review and acceptance will not extend to safety measures, means, methods, techniques, procedures of construction, or whether representations made in the HASP comply with Laws and Regulations, or standards of good practice.
 3. Do not perform Work at the site until written HASP has been accepted by Remediation Engineer.

4. Notwithstanding other provisions of the Contract Documents, changes in the Contract Price or Contract Times will not be authorized due to delay by Remediation Contractor in developing, submitting, or revising the HASP.

1.05 ACCIDENT REPORTING AND INVESTIGATION

- A. Immediately notify NYSEG and Remediation Engineer of all accidents that:
 1. Result in bodily injury, illness, or property damage.
 2. Affect the environment.
 3. Involve the public.
- B. Submit accident report to NYSEG and Remediation Engineer within 24 hours after accident occurs. Include in each report the following:
 1. Date, time, and location of accident.
 2. Names of all site personnel involved in or affected by accident.
 3. Description of accident and activities being performed when accident occurred.
 4. Medical treatment administered, if any.
 5. Nature and seriousness of injury or damage.
- C. Comply with 29 CFR 1904.29, including using OSHA 300, 300-A, and 301 forms (or equivalent) to document all accidents that result in bodily injury.
- D. Based upon results of accident investigation, modify HASP as required by changing tasks or procedures to prevent reoccurrence of accident.
- E. Post current copy of Remediation Contractor's OSHA 300-A report at conspicuous place at the site from February 1 through April 30 of each year.

1.06 DAILY HEALTH AND SAFETY FIELD REPORTS

- A. Prepare daily health and safety field reports throughout the Project. Include in each report, at a minimum, the following:
 1. Remediation Contractor's name.
 2. Owner's name (NYSEG).
 3. Project name.
 4. Site name and location.
 5. Date and day of the week.
 6. Weather conditions.
 7. Delays encountered in construction.
 8. Acknowledgment of deficiencies noted along with corrective actions taken on current and previous deficiencies.
 9. Daily health and safety exposure monitoring results, documentation of instrument calibration, new hazards encountered, and PPE utilized.
 10. Problems, real or anticipated, encountered during the Work that should be brought to the attention of NYSEG, Remediation Contractor's SHSO, and Remediation Engineer.
 11. Deviations from planned Work described in previously-submitted daily health and safety field report(s).
- B. Submit daily health and safety field reports to Remediation Engineer by 9:00 a.m. the next working day after the day covered in the associated report. Daily reports shall be signed by the Remediation Contractor's safety representative.

1.07 RECORDS

- A. Retain at the site complete and accurate health and safety records for all Remediation Contractor and Subcontractor employees assigned to the Project. Records shall include, at a minimum, the following:
 - 1. Valid Training Certificates:
 - a. Initial 40-hour HAZWOPER training.
 - b. Initial 24-hour HAZWOPER training.
 - c. Eight-hour HAZWOPER supervisor training.
 - d. Annual eight-hour HAZWOPER refresher training.
 - e. 10-hour construction safety training.
 - f. First-aid/cardiopulmonary resuscitation training.
 - g. Other training required by Remediation Contractor's HASP.
 - 2. Valid medical clearance certificates.
 - 3. Valid respirator fit test certificates.
 - 4. Accident reports, prepared in accordance with Article 1.05 of this Section.
 - 5. Daily health and safety field reports, prepared in accordance with Article 1.06 of this Section.
 - 6. Other records required by Laws and Regulations.
- B. Keep records up-to-date throughout the Project.
- C. Remediation Contractor's SHSO shall meet at least monthly with NYSEG and Remediation Engineer to review Remediation Contractor's health and safety records and verify compliance with this Section.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 35 43.13

ENVIRONMENTAL PROCEDURES FOR HAZARDOUS MATERIALS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Remediation Contractor shall develop, implement, and maintain a Hazardous Materials Management Program (HMMP) throughout the Project, in accordance with Laws and Regulations.
 - a. Hazardous Materials Brought to the site by Remediation Contractor: Transport, handle, store, label, use, and dispose of in accordance with this Section, and Laws and Regulations.
 - b. Hazardous Material Generated by Remediation Contractor:
 - 1) Hazardous Material shall be properly handled, stored, labeled, transported, and disposed of by Remediation Contractor in accordance with Laws and Regulations, and this Section.
 - 2) If Remediation Contractor will generate or has generated Hazardous Material at the site, obtain NYSEG's United States Environmental Protection Agency (USEPA) identification number listing Owner's name (NYSEG) and address of the site as generator of the Hazardous Material.
 - 3) Remediation Contractor shall be responsible for identifying, characterizing, profiling, transporting, and disposing of Hazardous Material generated by Remediation Contractor.
 - c. Fines or civil penalties levied against NYSEG for violations committed at the site by Remediation Contractor, and costs to NYSEG (if any) associated with cleanup of Hazardous Materials shall be paid by Remediation Contractor.

B. Enforcement of Laws and Regulations:

1. Interests of NYSEG are that accidental spills and emissions, site contamination, and injury of personnel at the site are avoided.
2. When NYSEG is aware of suspected violations, NYSEG will notify Remediation Contractor, and authorities having jurisdiction if NYSEG reasonably concludes that doing so is required by Laws or Regulations.

1.02 DEFINITIONS

A. The following terms are defined for this Section and supplement the terms defined in the General Conditions:

1. Hazardous Material: Material, whether solid, semi-solid, liquid, or gas, that, if not stored or used properly, may cause harm or injury to persons through inhalation, ingestion, absorption or injection, or that may negatively impact the environment through use or discharge of the material on the ground, in water (including groundwater), or to the air. Hazardous Material includes, but is not limited to, chemicals, Asbestos, Hazardous Waste, polychlorinated biphenyls (PCBs), Petroleum, Radioactive Material, and which is or becomes listed, regulated, or addressed pursuant to the following:
 - a. Comprehensive Environmental Response, Compensation, and Liability Act, 42 United States Code (USC) §§9601 et seq. ("CERCLA").
 - b. Hazardous Materials Transportation Act, 49 USC §§1801 et seq.
 - c. Resource Conservation and Recovery Act, 42 USC §§6901 et seq. ("RCRA").

- d. Toxic Substances Control Act, 15 USC §§2601 et seq.
- e. Clean Water Act, 33 USC §§1251 et seq.
- f. Clean Air Act, 42 USC §§7401 et seq.
- g. Any other Law or Regulation regulating, relating to, or imposing liability or standards of conduct concerning, any hazardous, toxic, or dangerous waste, substance, or material.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 29 CFR 1910, Occupational Safety and Health Standards.
 - b. 29 CFR 1926, Safety and Health Regulations for Construction.
 - c. 40 CFR 261.3, 264, and 265, Resource Conservation and Recovery Act (RCRA).
 - d. 49 CFR 171.8, Transportation, Definitions and Abbreviations.
 - e. 6 NYCRR 364, Waste Transporter Permits.
 - f. 6 NYCRR 371, Identification and Listing of Hazardous Wastes.
 - g. 6 NYCRR 372, Hazardous Waste Manifest System and Related Standards for Generators, Transporters, and Facilities.
 - h. 6 NYCRR 375, Environmental Remediation Programs.
 - i. 17 NYCRR 32, Oil Spill Prevention and Control – Actions to be Taken in Case of Discharge.

1.04 SUBMITTALS

A. Informational Submittals:

1. Hazardous Materials (including Chemicals) Proposed for Use at the site: Submit current (dated within the past two years) safety data sheets (SDSs) in accordance with 29 CFR 1910.1200 (OSHA Hazard Communication Standard), manufacturer, Supplier (if different than manufacturer), container size(s) and number of containers proposed to be at the site, minimum and maximum volume of material intended to be stored at the site, and description of process or procedures in which Hazardous Material will be used. Furnish information in sufficient time to obtain Remediation Engineer's acceptance no later than at least three days before bringing Hazardous Material to the site.
2. Hazardous Material Generated at the site: Submit for each Hazardous Material generated at the site identification number, analysis results, and number and size of storage containers at the site. Furnish information not less than three days after Remediation Contractor's receipt of analytical results.
3. Permits: Submit copies of permits for storing, handling, using, transporting, and disposing of Hazardous Materials, obtained from authorities having jurisdiction.
4. Other Documents required for the HMMP: Submit requested documents within three days of Remediation Contractor's receipt of request. HMMP documents may include communication plan, emergency/spill response plan, and other documents.

1.05 HAZARDOUS MATERIALS MANAGEMENT

- A. Obtain NYSEG's acceptance before bringing each Hazardous Material to the site.
- B. Communication Plan: Remediation Contractor shall develop a Hazardous Materials Communication Plan. At a minimum, maintain at the site two notebooks containing the following:
 1. Inventory of Hazardous Materials, including all chemicals.

2. Current (dated within the past two years) SDSs for all materials being used to accomplish the Work, whether or not defined as Hazardous Material in this Section. Keep one notebook in Remediation Contractor's field office at the site; keep second notebook at location acceptable to NYSEG and Remediation Engineer. Keep notebooks up-to-date as materials are brought to and removed from the site.
- C. Emergency/Spill Response Plan: Develop, implement, and maintain an emergency/spill response plan, for each Hazardous Material or each class/group of Hazardous Materials as applicable. Response plan shall include, at a minimum, the following:
1. Description of equipment and materials available at the site to contain a spill of, or respond to an emergency related to, the material.
 2. Procedures for notifying, and list of emergency contact information for:
 - a. Authorities having jurisdiction.
 - b. Emergency responders.
 - c. Remediation Contractor's project manager, site superintendent, site health and safety officer (SHSO), and foreman.
 - d. NYSEG and Remediation Engineer.
 - e. Other entities as required.
 3. Response coordination procedures between Remediation Contractor, NYSEG, Remediation Engineer, and others as appropriate.
 4. Site plan showing proposed location of Hazardous Materials storage area, location of spill containment/response equipment and materials, and location of storm water drainage inlets and drainage routes.
 5. Description of Hazardous Material handling and spill response training provided to Remediation Contractor's and Subcontractors' employees, in accordance with 29 CFR 1926.21(b) and other Laws and Regulations.
- D. Storage of Hazardous Materials and Non-Hazardous Materials:
1. Hazardous Materials containers shall bear applicable hazard diamond(s).
 2. Container Labeling:
 - a. Properly label each container of consumable materials, whether or not classified as Hazardous Materials under this Section.
 - b. Stencil Remediation Contractor's name and, as applicable, Subcontractor's name, on each vessel containing Hazardous Material and, for non-Hazardous Materials, on each container over five-gallon capacity. Containers shall bear securely-attached label clearly identifying contents. Label containers that are filled from larger containers.
 - c. If NYSEG or Remediation Engineer becomes aware of unlabeled containers at the site, NYSEG will notify Remediation Contractor. Properly label container(s) within one hour of receipt of notification or remove container from the site.
 3. To greatest extent possible, store Hazardous Materials off-site until required for use in the Work.
- E. Hazardous Materials Storage Area:
1. Maintain designated storage area for Hazardous Materials that includes secondary containment. Storage area shall include barriers to prevent vehicles from colliding with storage containers, and shall include protection from environmental factors such as weather.
 2. Provide signage in accordance with Laws and Regulations, clearly identifying the Hazardous Materials storage area.

- F. Remediation Contractor's SHSO shall meet at least monthly with NYSEG, Remediation Contractor's project manager, and Remediation Engineer to review Remediation Contractor's HMMP documents and procedures, and inspect storage areas and the site in general, to verify compliance with this Section.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 35 49

COMMUNITY AIR MONITORING PLAN

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Remediation Contractor and Remediation Engineer shall provide all labor, materials, equipment, services, and incidentals as specified and required to comply with the Project's Community Air Monitoring Plan (CAMP), respectively. The CAMP is part of the Contract Documents.
2. Remediation Engineer shall perform community air monitoring on a continuous basis during all ground-intrusive Work or dust-generating Work. Community air monitoring includes:
 - a. Real-time air monitoring for total volatile organic compounds (TVOCs) and particulate matter less than 10 micrometers in diameter (PM₁₀).
 - b. Periodic monitoring for manufactured gas plant- (MGP-) related odors.

B. Coordination:

1. Coordinate requirements of this Section with requirements for odor, vapor, and dust control in the Contract Documents.

C. Related Sections:

1. Section 01 57 00 - Temporary Controls.

1.02 TERMINOLOGY

A. The following words or terms are not defined but, when used in this Section, have the following meaning:

1. "Dust-generating Work" means any Work with the potential to generate dust. Examples of dust-generating Work include, but are not limited to, the following:
 - a. Handling removed soil and fill material.
 - b. Intrusive Work.
2. "Intrusive Work" means any Work performed below the existing level of the ground or sediment surface, or that involves the disturbance of existing earth, regardless of quantity. Examples of ground-intrusive Work include, but are not limited to, the following:
 - a. Grubbing.
 - b. Soil removal and handling.
 - c. Backfilling and grading.
3. "Perimeter of work area" means the limits of exclusion zone.
4. "Work area" means any area where ground-intrusive Work or dust-generating Work is being performed.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Air Monitoring Technician:

- a. Remediation Engineer's air monitoring technician shall have a minimum of three years direct construction safety or environmental monitoring experience, and appropriate health and safety training in accordance with Laws and Regulations.
- b. Remediation Engineer's air monitoring technician shall be present at the site at all times when dust-generating or intrusive Work is being performed, and shall be dedicated solely to the implementation of the CAMP.
- c. Responsibilities include, but are not necessarily limited to, the following:
 - 1) Installing the meteorological monitoring system.
 - 2) Selecting upwind and downwind monitoring locations and setting up air monitoring stations on a daily basis.
 - 3) Calibrating air monitoring equipment on a daily basis, or other frequency recommended by the manufacturer.
 - 4) Coordinating equipment maintenance and repairs.
 - 5) Monitoring meteorological conditions throughout the work day and relocating air monitoring stations as necessary and appropriate.
 - 6) Performing routine inspections of air monitoring stations to verify proper function.
 - 7) Performing periodic perimeter checks of the work area to monitor for MGP-related odors.
 - 8) Removing air monitoring stations and downloading TVOC and PM₁₀ data from monitoring equipment at the end of each work day.
 - 9) Managing a database of TVOC, PM₁₀, and meteorological data at the site.
 - 10) Attending progress meetings and other Project meetings, as required.
 - 11) Preparing and submitting weekly air monitoring reports in accordance with Article 1.05 of this Section.
 - 12) Preparing and submitting exceedance reports in accordance with Article 1.06 of this Section.
 - 13) Preparing and submitting daily odor monitoring logs in accordance with Article 1.07 of this Section.
 - 14) Notifying NYSEG and Remediation Contractor personnel when alert or action levels are exceeded at downwind monitoring locations, and when MGP-related odors are noted at the perimeter of the work area.

B. Regulatory Requirements:

1. Comply with applicable provisions and recommendations of the New York State Department of Environmental Conservation (NYSDEC) Technical Guidance for site Investigation and Remediation (DER-10).

1.04 SUBMITTALS

A. Informational Submittals:

1. Reports:

- a. Weekly Air Monitoring Reports: Submit in accordance with Article 1.05 of this Section.
 - b. Exceedance Reports: Submit in accordance with Article 1.06 of this Section.
2. Submit community air monitoring and weather data in accordance with Article 1.08 of this Section.

1.05 WEEKLY AIR MONITORING REPORTS

- A. Prepare weekly air monitoring reports throughout the Project. Include in each report, at a minimum, the following:
1. Remediation Contractor's name.
 2. Owner's name (NYSEG).
 3. Remediation Engineer's name.
 4. Project name.
 5. Site name and location.
 6. The following for each day that community air monitoring is performed:
 - a. Date and day of the week.
 - b. General location and brief description of work performed at the site.
 - c. Daily average concentration of TVOCs and PM₁₀ for each air monitoring station.
 - d. Daily maximum 15-minute time-weighted average (TWA) concentration of TVOCs and PM₁₀ for each air monitoring station.
 - e. Exceedances (if any) of the action levels specified in Paragraph 3.01.C of this Section. Provide the following:
 - 1) Time, location, and 15-minute TWA concentration (above background) of exceedance.
 - 2) Copy of exceedance report, prepared in accordance with Article 1.06 of this Section.
 - f. Site plan showing approximate locations of upwind and downwind air monitoring stations at the site and predominant wind direction for the day. Note if air monitoring stations were relocated during the day.
 - g. Copy of daily odor monitoring log, prepared in accordance with Article 1.07 of this Section.
- B. Submit weekly air monitoring reports. Remediation Engineer will distribute weekly air monitoring reports within three business days after the week covered in the associated report to:
1. NYSEG.
 2. Remediation Contractor.
 3. NYSDEC.
 4. New York State Department of Health (NYSDOH).
 5. Others as appropriate.

1.06 EXCEEDANCE REPORTS

- A. Prepare an exceedance report whenever the action levels specified in Paragraph 3.01.C of this Section are exceeded. Include in each report the following:
1. Remediation Contractor's name.
 2. Owner's name (NYSEG).
 3. Remediation Engineer's name.
 4. Project name.
 5. Site name and location.
 6. Date, day of the week, and time of exceedance.
 7. General location and brief description of work being performed at time of exceedance.
 8. Weather conditions at time of exceedance.
 9. For each air monitoring station, 15-minute TWA concentration of TVOCs and PM₁₀ at time of exceedance.
 10. Source or cause of exceedance.
 11. Corrective actions taken or to be taken in response to exceedance.
 12. Date and time verbal or written notification was provided to NYSDEC.

- B. Submit exceedance reports. Remediation Engineer will distribute exceedance reports within 24 hours after exceedance to:
 - 1. NYSEG.
 - 2. Remediation Contractor.
 - 3. NYSDEC.
 - 4. NYSDOH.
 - 5. Others as appropriate.

1.07 DAILY ODOR MONITORING LOG

- A. Prepare daily odor monitoring logs throughout the Project. Include in each daily log, at a minimum, the following:
 - 1. Remediation Contractor's name.
 - 2. Owner's name (NYSEG).
 - 3. Project name.
 - 4. Site name and location.
 - 5. Date and day of the week.
 - 6. Weather conditions.
 - 7. Time and outcome of each perimeter check.
 - a. Note the presence or absence of MGP-related odors at the perimeter of the work area.
 - b. Identify the general location(s) along the work area perimeter where MGP-related odors are noticed.
 - 8. Time and outcome of any odor complaints from the public.
- B. Submit daily odor monitoring logs in weekly air monitoring report submittal in accordance with Article 1.05 of this Section.

1.08 DATA MANAGEMENT

- A. Maintain a database of TVOC, PM₁₀, and meteorological data files at the site.
 - 1. Index TVOC and PM₁₀ data files by date, station number, station location (upwind or downwind), and data type (TVOC or PM₁₀).
 - 2. Index meteorological data files by date.
- B. Back up data files to disc or portable hard drive on a weekly or more frequent basis.
- C. Submit TVOC, PM₁₀, and meteorological data files on a monthly basis throughout the Project. Label each disc with the following information:
 - a. Dates covered.
 - b. Owner's name (NYSEG).
 - c. Project name.
 - d. Site name and location.

PART 2 – PRODUCTS

2.01 PERIMETER AIR MONITORING SYSTEM

- A. System Description:
 - 1. Provide complete, integrated perimeter air monitoring system consisting of the following:
 - a. Three portable air monitoring stations, each capable of measuring real-time ambient air concentrations of TVOCs and PM₁₀, logging air monitoring data, and alerting site personnel if alert levels or action levels are exceeded.

- b. One portable meteorological monitoring system capable of measuring wind speed, wind direction, relative humidity, dry bulb temperature, and barometric pressure, and displaying and logging weather data.
- B. Air Monitoring Stations:
 - 1. Photoionization Detectors: Direct-reading, data-logging photoionization detector with 10.6 eV lamp. Provide one of the following for each air monitoring station:
 - a. MiniRAE 3000 by RAE Systems.
 - b. Or equal.
 - 2. Aerosol Photometers: Direct-reading, data-logging aerosol monitor. Provide one of the following for each air monitoring station:
 - a. DustTrak II Aerosol Monitor Model 8530 by TSI, Inc.
 - b. Or equal.
 - 3. Spare Equipment: Provide and retain at the site the following:
 - a. Spare photoionization detectors and aerosol photometers to allow for uninterrupted monitoring in the event of equipment damage or malfunction.
 - b. Spare batteries for each photoionization detector and aerosol photometer to allow for continuous real-time monitoring and data-logging for a period of not less than 12 hours.
 - 4. Environmental Enclosures and Mounting Tripods: Provide portable, weather-tight enclosure and compatible mounting (survey) tripod for each air monitoring station. Environmental enclosures shall provide proper operating conditions for photoionization detectors and aerosol photometers.
 - 5. Alarms and Wireless Alert System: Provide for each air monitoring station audible and visible alarms and wireless alert system capable of alerting air monitoring technician in real-time (via handheld radio, cell phone, etc.) if alert or action levels are exceeded.
 - 6. Accessories: Provide equipment calibration kits, sampling inlets, data management software, and other accessories recommended by the equipment manufacturers for the intended application.
- C. Meteorological Monitoring System:
 - 1. Product and Manufacturer: Provide one of the following:
 - a. Wireless Vantage Pro2 by Davis Instruments.
 - b. Or equal.
 - 2. Accessories: Provide the following:
 - a. WeatherLink data logger and software suite by Davis Instruments.
 - b. Mounting Pole Kit by Davis Instruments.
 - c. Other accessories recommended by equipment manufacturer for the intended application.

PART 3 – EXECUTION

3.01 REAL-TIME AIR MONITORING FOR TVOCs AND PM10

- A. Air Monitoring Stations:
 - 1. Installation:
 - a. Deploy air monitoring stations at the start of each work day before any ground-intrusive Work or dust-generating Work is initiated.
 - 1) Position one air monitoring station at the upwind perimeter of the work area and two air monitoring stations at the downwind perimeter of the work area. Determine and designate upwind and downwind air monitoring stations based on predominant wind direction, and nature and location of Work to be performed.

- 2) Set alarm levels on real-time TVOC and PM₁₀ monitoring equipment to respond to 15-minute TWA concentrations at or below the action levels specified in Paragraph 3.01.C of this Section.
 - 3) Ensure that community air monitoring is being performed before initiating ground-intrusive Work or dust-generating Work.
 - b. Monitor wind direction throughout the day and adjust locations of air monitoring stations if wind direction shifts more than 60 degrees from original upwind direction. Document original upwind and downwind air monitoring stations, and any changes made to monitoring locations during the day.
 2. Protection:
 - a. Protect air monitoring stations from damage due to construction operations, weather, and vandalism.
 - b. Immediately remove from service, and replace at Remediation Engineer's expense, damaged equipment.
 3. Removal:
 - a. Remove air monitoring stations at the end of each work day, and only after all ground-intrusive Work or dust-generating Work has been completed for the day.
 - b. Download TVOC and PM₁₀ data from air monitoring stations at the end of each day.
- B. Alert Levels and Response:
1. Alert Levels:
 - a. TVOCs: 15-minute TWA concentration at downwind air monitoring station of 2.5 parts per million (ppm) above background (upwind) 15-minute TWA concentration.
 - b. PM₁₀: 15-minute TWA concentration at any one (or more) downwind air monitoring station of 100 micrograms per cubic meter (µg/m³) above average background (upwind) 15-minute TWA concentration, or visible dust observed leaving the work area.
 2. Response: Implement the following if alert levels are exceeded:
 - a. Notify Remediation Contractor.
 - b. Remediation Contractor shall continue Work and employ additional odor, vapor, and/or dust controls (depending on the reason for the alert) to abate emissions in accordance with Section 01 57 00 - Temporary Controls.
 - c. Evaluate and, if necessary and appropriate, modify construction techniques.
- C. Action Levels and Response:
1. Action Levels:
 - a. TVOCs: 15-minute TWA concentration at downwind air monitoring station of 5 ppm above background (upwind) 15-minute TWA concentration.
 - b. PM₁₀: 15-minute TWA concentration at downwind air monitoring station of 150 µg/m³ above background (upwind) 15-minute TWA concentration.
 2. Response: Implement the following if action levels are exceeded:
 - a. Remediation Contractor shall stop all Work and Remediation Engineer shall immediately notify NYSEG. NYSEG or Remediation Engineer will notify the NYSDEC project manager by telephone or e-mail within two hours after the exceedance.
 - b. Remediation Engineer shall continue monitoring and Remediation Contractor shall employ additional odor, vapor, and dust controls to abate emissions in accordance with Section 01 57 00 - Temporary Controls.
 - c. Identify the source or cause of the exceedance.
 - d. Remediation Contractor shall evaluate and, if necessary and appropriate, modify construction techniques.
 - e. Remediation Engineer shall prepare exceedance report in accordance with Article 1.06 of this Section.

- f. Work shall not resume until 15-minute TWA concentrations are below the action levels. If the 15-minute TWA concentration of TVOCs exceeds 25 ppm above the background (upwind) 15-minute TWA concentration, work shall not resume until authorized by NYSEG.

3.02 PERIODIC MONITORING FOR MGP-RELATED ODORS

A. Perimeter Checks:

1. During work hours, perform periodic walks around the entire perimeter of the work area to monitor for MGP-related odors.
2. Document the time and outcome of each perimeter check in daily odor monitoring log in accordance with Article 1.07 of this Section.
3. Implement the following if MGP-related odors are noticed at the perimeter of the work area:
 - a. Notify Remediation Contractor personnel.
 - b. Remediation Contractor shall continue Work and employ additional odor, vapor, and dust controls to abate emissions in accordance with Section 01 57 00 - Temporary Controls.
 - c. Remediation Contractor shall evaluate and, if necessary and appropriate, modify construction techniques.
 - d. Remediation Engineer shall perform more frequent perimeter checks.
 - e. If MGP-related odors persist at the perimeter of the work area, Remediation Contractor shall stop work and Remediation Engineer shall notify NYSEG.
 - f. Identify the source or cause of MGP-related odors.
 - g. Remediation Contractor shall evaluate and, if necessary and appropriate, further modify construction techniques and employ additional odor, vapor, and dust controls to abate emissions in accordance with Section 01 57 00 - Temporary Controls.
 - h. Work shall not resume until authorized by NYSEG.

B. Odor Complaints:

1. Immediately notify NYSEG of any odor complaints from the public. NYSEG or Remediation Engineer will immediately direct such complaints to NYSDEC's onsite representative.
2. Implement the following in response to an odor complaint:
 - a. As appropriate, Remediation Engineer shall verify the legitimacy of the complaint based on the Work being performed at the site, the predominant wind direction, and other climatological factors.
 - b. Remediation Engineer shall continue monitoring and Remediation Contractor shall employ additional odor, vapor, and dust controls to abate emissions in accordance with Section 01 57 00 - Temporary Controls.
 - c. Remediation Contractor shall evaluate and, if necessary and appropriate, modify construction techniques.
3. Remediation Engineer shall document the time and outcome of any odor complaints in daily odor monitoring log in accordance with Article 1.07 of this Section.

3.03 FIELD QUALITY CONTROL

- A. Remediation Engineer shall calibrate air monitoring equipment on a daily basis, or other frequency recommended by the manufacturer, in accordance with manufacturer's calibration and quality assurance requirements. Document all instrument readings, field reference checks, and calibrations in a dedicated log.

- B. During the work day, Remediation Engineer shall perform periodic field checks of monitoring equipment to verify proper function. Document the date, day, time, and outcome of each field check in a dedicated log.
- C. Remediation Engineer shall immediately remove from service, and replace, in coordination with NYSEG, damaged or malfunctioning equipment.
- D. Preventative maintenance and repair of monitoring equipment, if required, shall only be performed by qualified personnel, or authorized representatives of the manufacturer.
- E. Remediation Engineer shall prepare and retain at the site electronic or written records of all equipment calibrations, field checks, maintenance, and repairs.

END OF SECTION

SECTION 01 41 26

STORM WATER POLLUTION PREVENTION PLAN AND PERMIT

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Remediation Contractor shall comply with the Project's erosion and sedimentation control measures shown on the Design Drawings and the substantive requirements of the most current version of New York State Department of Environmental Conservation (NYSDEC) State Pollutant Discharge Elimination System General Permit for Storm Water Discharges from Construction Activity (hereinafter, the "SPDES General Permit"). Remediation Contractor is responsible for providing necessary materials and taking appropriate measures to comply with requirements of the SPDES General Permit and minimize pollutants in storm water run-off from the site.
- B. Documents: The following are part of the Work included under this Section:
 - 1. Storm Water Permit Certification Statement: To be submitted by Remediation Contractor to Remediation Engineer on the form included with this Section. Do not perform Work at the site until the storm water permit certification statement has been submitted to Remediation Engineer.
 - 2. Storm Water Inspection Reports: Prepared by Remediation Contractor's qualified inspector and submitted to Remediation Engineer in accordance with Article 1.05 of this Section. A storm water inspection report shall be prepared for each site inspection and assessment required by the SPDES General Permit and this Section.
- C. Prevent discharge of sediment to and erosion from the site to surface waters, drainage routes, public streets and rights-of-way, and private property, including dewatering operations. Prevent trash and construction and demolition debris from leaving the site via storm water run-off. Provide berms, dikes, and other acceptable methods of directing storm water around work areas to drainage routes.
- D. Do not cause or contribute to a violation of water quality standards, Laws, or Regulations. Provide and implement measures to control pollutants in storm water run-off from the site to prevent:
 - 1. Turbidity increases that will cause a substantial visible contrast to natural conditions.
 - 2. Increase in suspended, colloidal, and settle-able solids that would cause sediment deposition or impair receiving water quality and use.
 - 3. Presence of residue from oil and floating substances, visible oil, and globules of grease.
- E. Remediation Contractor shall pay civil penalties and other costs incurred by NYSEG, including additional engineering, construction management, and inspection services, associated with non-compliance with the SPDES General Permit and erosion, sediment, and turbidity controls associated with the Work.
- F. Contract Price includes all material, labor, and other permits and incidental costs related to:
 - 1. Installing and maintaining structural and non-structural items used in complying with the Contract Documents and its revisions, if any.
 - 2. Clean-up, disposal, and repairs following wet weather events or spills caused by Remediation Contractor.

3. Implementing and maintaining “best management practices”, as defined in applicable permits and Laws or Regulations, to comply with requirements that govern storm water discharges at the site.
 4. Inspecting erosion, sediment, turbidity, and storm water controls as specified.
- G. Coordinate requirements of this Section with requirements for earthwork, erosion control, and landscaping in the Contract Documents, applicable permit requirements, and Laws and Regulations.
- H. Implement erosion and sedimentation controls and practices prior to starting other Work at the site.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. Qualified Inspector:

- a. Remediation Contractor’s qualified inspector shall be knowledgeable in the principles and practices of erosion, sediment, and turbidity control, and shall be responsible for performing site inspections and assessments, and preparing and certifying storm water inspection reports, in accordance with this Section.
- b. Remediation Contractor’s qualified inspector shall be one of the following:
 - 1) Professional engineer licensed and registered in the State of New York.
 - 2) Landscape architect licensed and registered in the State of New York.
 - 3) Certified Professional in Erosion and Sediment Control.
 - 4) NYSDEC-endorsed individual.
 - 5) An individual working under the direct supervision of, and employed by the same company as, a professional engineer or landscape architect licensed and registered in New York State, provided that said individual has received four hours of NYSDEC-endorsed training in proper erosion and sediment control principles from a Soil and Water Conservation District, or other NYSDEC-endorsed entity. Following the initial training, the individual shall have completed four hours of training every three years.

B. Regulatory Requirements:

1. Comply with Laws and Regulations related to environmental protection and restoration, including:
 - a. SPDES General Permit.
 - b. New York State Standards and Specifications for Erosion and Sediment Control.

1.03 SUBMITTALS

A. Informational Submittals:

1. Storm Water Permit Certification Statement: Submit in accordance with Paragraph 1.01.B.3 of this Section.
2. Qualifications Statements: Submit name and qualifications of qualified inspector, including summary of experience, training received, and copy of valid certifications applicable to the Project.
3. Storm Water Inspection Reports: Submit in accordance with Article 1.05 of this Section.

1.04 EROSION AND SEDIMENTATION CONTROL REVISIONS

- A. Design Engineer will prepare an Erosion and Sedimentation Control Revision in accordance with the SPDES General Permit:

1. When the provisions of the erosion and sedimentation controls prove to be ineffective in minimizing pollutants in storm water discharges from the site.
2. When there is a significant change in design, construction, operation, or maintenance of the Project that has or could have an effect on the discharge of pollutants from the site.
3. To address issues or deficiencies identified during an inspection by Remediation Contractor's qualified inspector, NYSDEC, or other regulatory authority having jurisdiction.

1.05 STORM WATER INSPECTION REPORTS

- A. Prepare a storm water inspection report for each site inspection and assessment required by the SPDES General Permit and this Section. Each report shall be prepared using the form included with this Section.
- B. Include in each storm water inspection report, at a minimum, the following:
 1. Date and time of inspection.
 2. Name, title, and affiliation of Remediation Contractor's qualified inspector.
 3. Weather and soil conditions (e.g., dry, wet, saturated, etc.) at the time of the inspection.
 4. Description of and site plan showing areas that are disturbed at the time of the inspection and any areas that have been stabilized (either temporary or final) since the previous inspection.
 5. Repairs, maintenance, or corrective actions implemented since the previous inspection. Include digital photographs, with date stamp, that clearly show the areas or items installed, repaired, or replaced.
 6. Condition of storm water run-off at all points of discharge from the site.
 7. Identification of any erosion, sediment, turbidity, and storm water controls that require repair or maintenance.
 8. Identification of any erosion, sediment, turbidity, and storm water controls that were not installed properly or are not functioning as designed.
 9. Repairs, maintenance, or corrective actions required to correct any deficiencies observed during the inspection. Include digital photographs, with date stamp, that clearly show the deficient areas or items.
- C. Submit storm water inspection reports to Remediation Engineer within three days after each inspection. Inspection reports shall be signed by Remediation Contractor's qualified inspector.
- D. Retain copies of storm water inspection reports at the site. Keep with the Contract Documents and any revisions.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 INSPECTIONS AND REPAIRS

- A. Perform site inspections and assessments as required by the SPDES General Permit and this Section to ensure the continued effectiveness and integrity of all erosion and sedimentation controls and practices, including erosion, sediment, and turbidity controls. Inspections and assessments shall be done by Remediation Contractor's qualified inspector.
- B. Inspections:

1. Site inspections shall be performed:
 - a. After installation of erosion and sedimentation controls, including erosion, sediment, and turbidity controls, and temporary field offices and other temporary facilities, prior to starting other Work at the site.
 - b. Every seven days during the Work, and within 24 hours after wet weather events, until all disturbed areas have achieved final stabilization in accordance with the SPDES General Permit and the Contract Documents. For temporary Work stoppages and seasonal shut-downs greater than two weeks in duration, inspection frequency may be reduced to once every 30 days if temporary stabilization measures have been applied to all disturbed surfaces, and if approved by Remediation Engineer, NYSEG, and NYSDEC.
 2. During each inspection, verify sediment control practices and record approximate degree of sediment accumulation as percentage of acceptable sediment storage volume. Inspect erosion, sediment, and turbidity, control practices and record repairs and maintenance performed, if any. Observe and record deficiencies relative to implementation of the Contract Documents.
 3. Prepare storm water inspection report for each inspection in accordance with Article 1.05 of this Section.
- C. Notify Remediation Engineer within one day after each inspection of any deficiencies observed, and any repairs, maintenance, or corrective actions required to correct such deficiencies.
- D. Complete repairs or maintenance to erosion and sedimentation controls in accordance with applicable requirements and to satisfaction of Remediation Engineer within two days after each inspection. If site conditions prevent repairs or maintenance from being completed, document such conditions in the subsequent storm water inspection report and complete repairs or maintenance as soon as site conditions permit.
- E. Cooperate with representatives of authorities having jurisdiction during periodic visits to site, and promptly provide information requested by authorities having jurisdiction.

3.02 ATTACHMENTS

- A. The attachments listed below, which follow after the "End of Section" designation, are part of this Section:
1. Attachment A: Storm water permit certification statement form (one page).
 2. Attachment B: Storm water inspection report form (four pages).

END OF SECTION

NYSEG
CLYDE FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF CLYDE, WAYNE COUNTY, NEW YORK

STORM WATER PERMIT CERTIFICATION STATEMENT

Each Remediation Contractor and Subcontractor identified in the Contract Documents shall certify that they understand the permit conditions and their responsibilities. Every Remediation Contractor and Subcontractor performing an activity that involves soil disturbance shall sign and submit this certification statement to Remediation Engineer prior to performing the Work. This certification statement shall be signed by an owner, principal, president, secretary, or treasurer of the firm.

I hereby certify that I understand and agree to comply with the terms and conditions of the Contract Documents and agree to implement any corrective actions identified by the qualified inspector during a site inspection. I also understand that NYSEG must comply with the terms and conditions of the most current version of NYSDEC's SPDES General Permit for Storm Water Discharges from Construction Activity (SPDES General Permit), and that it is unlawful for any person to cause or contribute to a violation of water quality standards. Furthermore, I understand that certifying false, incorrect, or inaccurate information is a violation of the referenced permit and the laws of the State of New York, and could subject me to criminal, civil, and/or administrative proceedings.

Firm: _____

Address: _____

Name (Print): _____ Title: _____

Signature: _____ Date: _____

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STORM WATER PERMIT CERTIFICATION STATEMENT FORM
01 41 26A – 2
REVISION NO. 00
DATE ISSUED: MAY 2019

NYSEG
REMEDIAL DESIGN
CLYDE FORMER MGP SITE
VILLAGE OF CLYDE, WAYNE COUNTY, NEW YORK

Arcadis of New York, Inc.

L:\Clients\Iberdrola\Avangrid\AVANGRID Networks\NYSEG\Clyde\10 Final Reports and Presentations\2019\Final RD\App B - Specifications\01 41 26A - Permit Certification Form_msh.docx

NYSEG
CLYDE FORMER MANUFACTURED GAS PLANT SITE
VILLAGE OF CLYDE, WAYNE COUNTY, NEW YORK

STORM WATER INSPECTION REPORT

Date and Time of Inspection: _____

Qualified Inspector (Name, Title, and Affiliation): _____

Weather Conditions: _____

Soil Conditions: _____

Describe disturbed areas at time of inspection: _____

Describe areas stabilized (temporary or final) since previous inspection: _____

ATTACH SITE PLAN SHOWING APPROXIMATE LIMITS OF DISTURBED AND NEWLY-STABILIZED AREAS

Describe repairs, maintenance, or corrective actions implemented since previous inspection: _____

ATTACH PHOTOGRAPHS OF AREAS OR ITEMS INSTALLED, REPAIRED, OR REPLACED

Maintaining Water Quality (Turbidity Control)**Yes No NA**

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is there an increase in turbidity causing a substantial visible contrast to natural conditions? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is there residue from oil and floating substances, visible oil film, or globules or grease? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | All disturbance is within the limits of the approved plans? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Have receiving lake/bay and/or wetland been impacted by silt from project? |

Housekeeping**Yes No NA****1. General Site Conditions:**

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is construction site litter and debris appropriately managed? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Are facilities and equipment necessary for implementation of erosion, sediment, and turbidity control in working order and/or properly maintained? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is construction impacting the adjacent property? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is dust adequately controlled? |

Run-Off Control Practices (if necessary)**Yes No NA****1. Interceptor Dikes and Swales (if applicable):**

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Installed per plan with minimum side slopes of 2H:1V or flatter? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Stabilized by geotextile fabric, seed, or mulch with no erosion occurring? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Sediment-laden run-off directed to sediment trapping structure? |

2. Stone Check Dam (if applicable):

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is channel stable (flow is not eroding soil underneath or around the structure)? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Check dam is in good condition (rocks in place and no permanent pools behind the structure)? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Has accumulated sediment been removed? |

Soil Stabilization**Yes No NA****1. Topsoil and Spoil Stockpiles:**

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Stockpiles are stabilized with vegetation and/or mulch? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Sediment control is installed at the toe of the slope? |

2. Revegetation:

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Temporary seed and mulch have been applied to idle areas? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Six inches minimum of topsoil has been applied under permanent seeding? |

Sediment Control Practices**Yes No NA****1. Stabilized Construction Entrance:**

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Stone is clean enough to effectively remove mud from vehicles? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Installed per standards and specifications? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Does all traffic use the stabilized entrance to enter and leave construction site? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Is adequate drainage provided to prevent ponding at entrance? |

2. Silt Fence:

Sediment accumulation is ____% of design capacity.

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Installed per plan? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Joints constructed by wrapping the two ends together for continuous support? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Fabric buried six inches minimum below grade? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Posts are stable, fabric is tight and without rips or frayed areas? |

Sediment Control Practices (continued)

Yes No NA

3. Storm Drain Inlet Protection (Use for Stone and Block; Filter Fabric; Curb; or Excavated Practices)

Sediment accumulation ____% of design capacity.

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Installed concrete blocks lengthwise so open ends face outward, not upward? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Placed wire screen between No. 3 crushed stone and concrete blocks? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Drainage area is one acre or less? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Excavated area is 900 cubic feet? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Excavated side slopes are 2H:1V? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | 2"x4" frame is constructed and structurally sound? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Three-foot maximum spacing between posts? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Fabric is embedded one to 1.5 feet below ground and secured to frame/posts with staples at maximum eight-inch spacing? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Posts are stable, fabric is tight and without rips or frayed areas? |

4. Temporary Sediment Trap:

Sediment accumulation is ____% of design capacity.

- | | | | |
|--------------------------|--------------------------|--------------------------|---|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Outlet structure is constructed per the approved plan or drawing? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Geotextile fabric has been placed beneath rock fill? |

5. Temporary Sediment Basin:

Sediment accumulation is ____% of design capacity.

- | | | | |
|--------------------------|--------------------------|--------------------------|--|
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Basin and outlet structure constructed per the approved plan? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Basin side slopes are stabilized with seed and mulch? |
| <input type="checkbox"/> | <input type="checkbox"/> | <input type="checkbox"/> | Drainage structure flushed and basin surface restored upon removal of sediment basin facility? |

Describe any repairs, maintenance, or corrective actions required to correct observed deficiencies: _____

ATTACH PHOTOGRAPHS OF DEFICIENT AREAS OR ITEMS OBSERVED DURING THE INSPECTION

Qualified Inspector's Certification:

I certify under penalty of Law that this document and all attachments were prepared under my direction or supervision in accordance with a system to ensure that qualified personnel properly gathered and evaluated the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that false statements made herein may be punishable by Law.

Signature: _____ Date: _____

SECTION 01 51 00
TEMPORARY UTILITIES

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Remediation Contractor shall provide all temporary utilities required for the Project.
 - a. Make all arrangements with utility service companies for temporary services and obtain required permits and approvals for temporary utilities.
 - b. Pay all utility service costs, including cost of electricity, water, fuel, and other utility services required for the Work.
 - c. Continuously maintain adequate utilities for all purposes during the Project, until removal of temporary utilities and temporary facilities. At a minimum, provide and maintain temporary utilities through Substantial Completion and removal of temporary field offices and sheds.
 - d. Should NYSEG occupy part of the Project prior to Substantial Completion of the entire Work, cost of utilities consumed via temporary utilities serving the portion occupied by NYSEG will be shared proportionately between NYSEG and Remediation Contractor as mutually agreed to by the parties.
 - e. Maintain, including cleaning, temporary utilities and continuously provide consumables as required.
 - f. Temporary utilities shall be adequate for personnel using the site and requirements of the Project.
 - g. Provide temporary utilities in compliance with Laws and Regulations and, when applicable, requirements of utility owners.

B. Provide the following temporary utilities:

1. Electricity. May be provided by generator(s).
2. Lighting.
3. Telephone and Internet.
4. Heating, ventilating, and temporary enclosures.
5. Water.
6. Fire protection.

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:

1. National Fire Protection Association (NFPA) 10, Standard for Portable Fire Extinguishers.
2. NFPA 241, Standard for Safeguarding Construction, Alteration, and Demolition Operations.

1.03 REQUIREMENTS FOR TEMPORARY UTILITIES

A. Electrical:

1. Provide temporary electrical service required for the Work, including continuous power for temporary field offices and sheds. Provide temporary outlets with circuit breaker protection and ground fault protection.

2. If a generator is used to provide the temporary electrical service, provide sound enclosures, as necessary to mitigate noise produced by generators. Follow local noise ordinances to determine requirements and necessity for sound enclosures.
- B. Lighting:
1. Minimum lighting shall be five foot-candles for open areas and 10 foot-candles for stairs and shops. Provide minimum of one, 300-watt lamp every 15 feet in indoor Work areas.
- C. Telephone and Communications:
1. Provide temporary telephone and internet required for Remediation Contractor's operations at the site and for summoning emergency medical assistance.
 2. Remediation Contractor is responsible for providing the automated answering service for the project hotline.
- D. Heating, Ventilating, and Enclosures:
1. Provide sufficient temporary heating, ventilating, and enclosures to ensure safe working conditions and prevent damage to existing facilities and the Work.
 2. Except where otherwise specified, temporary heating shall maintain temperature of the area served between 50 degrees Fahrenheit and maximum design temperature of building or facility and its contents.
 3. Maintain temperature of areas occupied by NYSEG's personnel or electronic equipment, including offices, lunch rooms, locker rooms, toilet rooms, and rooms containing computers, microprocessors, and control equipment, between 65 degrees F and 80 degrees F with relative humidity less than 75 percent.
 4. Required temperature range for storage areas and certain elements of the Work, including preparation of materials and surfaces, installation or application, and curing as applicable, shall be in accordance with the Contract Documents for the associated Work and the Supplier's recommended temperature range for storage, application, or installation, as appropriate.
 5. Provide temporary ventilation sufficient to prevent accumulation in construction areas and areas occupied by NYSEG of hazardous and nuisance levels or concentrations of dust and particulates, mist, fumes or vapors, odors, and gases associated with construction.
 6. Provide temporary enclosures and partitions required to maintain required temperature and humidity.
- E. Water:
1. Provide temporary water facilities including piping, valves, meters if not provided by owner of existing waterline, backflow preventers, pressure regulators, and other appurtenances. Provide freeze-protection as required.
 2. Provide water for temporary sanitary facilities, field offices, site maintenance and cleaning and, when applicable, disinfecting and testing of systems.
 3. Continuously maintain adequate water flow and pressure for all purposes during the Project, until removal of temporary water system.
- F. Fire Protection:
1. Provide temporary fire protection, including portable fire extinguishers rated not less than 2A or 5B in accordance with NFPA 10 for each temporary building and for every 3,000 square feet of floor area under construction.
 2. Comply with NFPA 241 and requirements of fire marshals and authorities having jurisdiction at the site.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for temporary systems may be new or used, but shall be adequate for purposes intended and shall not create unsafe conditions, and shall comply with Laws and Regulations.
- B. Provide required materials, equipment, and facilities, including piping, wiring, and controls.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install temporary utilities in neat, orderly, manner, and make structurally, mechanically, and electrically sound throughout.
- B. Location of Temporary Utilities:
 - 1. Locate temporary systems for proper function and service.
 - 2. Temporary systems shall not interfere with or provide hazards or nuisances to the Work under this and other contracts, movement of personnel, traffic areas, materials handling, hoisting systems, storage areas, finishes, and work of utility companies.
 - 3. Do not install temporary utilities on the ground, with the exception of temporary extension cords, hoses, and similar systems in place for short durations.
- C. Modify and extend temporary systems as required by progress of the Work.

3.02 USE

- A. Maintain temporary systems to provide safe, continuous service as required.
- B. Properly supervise operation of temporary systems:
 - 1. Enforce compliance with Laws and Regulations.
 - 2. Enforce safe practices.
 - 3. Prevent abuse of services.
 - 4. Prevent nuisances and hazards caused by temporary systems and their use.
 - 5. Prevent damage to finishes.
 - 6. Ensure that temporary systems and equipment do not interrupt continuous progress of construction.
- C. At end of each work day, check temporary systems and verify that sufficient consumables are available to maintain operation until work is resumed at the site. Provide additional consumables if the supply on hand is insufficient.

3.03 REMOVAL

- A. Completely remove temporary utilities, facilities, equipment, and materials when no longer required. Repair damage caused by temporary systems and their removal, and restore the site to condition required by the Contract Documents. If restoration of damaged areas is not specified, restore to pre-construction condition.

- B. Where temporary utilities are disconnected from existing utility, provide suitable, water-tight or gas-tight (as applicable) cap or blind flange, as applicable, on service line, in accordance with requirements of utility owner.

END OF SECTION

SECTION 01 52 13

FIELD OFFICES AND SHEDS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Field Offices shall be located at NYSEG's property identified as the Clyde Former Manufactured Gas Plant (MGP) Site (the site) located at approximately 16 Sodus Street in Clyde, New York.
2. Remediation Contractor shall maintain field offices at the site for NYSEG, Remediation Engineer, New York State Department of Environmental Conservation (NYSDEC), and Remediation Contractor.
3. Provide required storage and work sheds.
4. Field offices shall be complete, fully functional, and ready for occupancy within 14 days after Remediation Engineer's approval of the submittal required by this Section.

B. Related Sections:

1. Section 01 51 00 - Temporary Utilities.
2. Section 01 52 16 - First-Aid Facilities.

1.02 SUBMITTALS

A. Action Submittals:

1. Field Office Submittal: Submit, as a single submittal, the following:
 - a. Site plan indicating proposed location of field offices, parking for field offices, and facilities related to the field offices.
 - b. Listing of utility providers (if applicable).
 - c. Product data and technical information for multifunction printer and telephone system.

PART 2 – PRODUCTS

2.01 FIELD OFFICES (TWO TRAILERS)

- A. Two field office trailers shall consist of a Mobile Office manufactured by ModSpace (or equivalent) and provide a minimum of 400 square feet of floor space (with a 10-foot minimum width) and shall be partitioned to provide three separate office spaces (one of which will serve as a shared common area). A minimum of two outside doors will be required. A sign reading "All Site Visitors Must Sign-In Here" shall be affixed to the trailer exterior of the Remediation Contractor's trailer.
 1. Trailers shall be completely weather-tight and insulated.
 2. Windows shall each have insect screen and operable sash. Provide each window with lock and exterior security bars approved by the Remediation Engineer.
 3. Each trailer shall have two doors for ingress and egress, each with landing, stairs, and railing conforming to building codes in effect at the site.
 - a. Landing and stairs shall be metal, pressure-treated wood, fiberglass, or concrete, and have slip-resistant walking surfaces.
 - b. Railing shall be metal, wood, or fiberglass.

- c. Doors shall be secure and lockable, and each furnished with suitable, lockable security bar by MasterLock or equal.
- 4. Furnish to Remediation Engineer and NYSDEC two identical sets each of keys suitable for operating all keyed locks, including ingress/egress door locks, security bars for doors, window locks, closets, and office furnishings
- B. The Remediation Contractor shall provide and maintain, in accordance with all applicable codes and regulations, the fire protection system (e.g., fire extinguishers, sprinklers, etc.) and electric, heating, and cooling services for the office trailers.

2.02 FIELD OFFICE UTILITIES

- A. Comply with Section 01 51 00 - Temporary Utilities.
- B. Provide the following for each field office:
 - 1. Electrical System and Lighting:
 - a. Electric service as required, including paying all costs.
 - b. Interior lighting of 50 foot-candles at desktop height.
 - c. Minimum of eight 120-volt, wall-mounted, duplex convenience electrical receptacles.
 - d. Exterior, wall-mounted, 250-watt lighting at each entrance.
 - 2. Heating, Ventilating, and Air Conditioning:
 - a. Automatic heating to maintain indoor temperature of at least 65 degrees Fahrenheit (F) in cold weather.
 - b. Automatic cooling to maintain indoor temperature no warmer than 75 degrees F in warm weather.
 - c. Furnish all fuel and pay all utility costs.
 - 3. Telephone Service:
 - a. Private telephone service, including payment of installation, monthly, and service costs.
 - b. Provide four telephone lines, two for voice and two for fax service (four lines total), each with separate telephone number assigned by the telephone company.
 - c. Pay for unlimited local and long-distance service for duration of the Project.
 - 4. Internet Service:
 - a. Obtain and pay for Internet service, with unlimited (untimed) Internet access, until removal of field office trailers.
 - b. Provide fiber-optic or cable connection with appropriate modem and appurtenances, and dual-band Wireless-N router.
 - c. Minimum Speed: Up to 15 megabits per second download, up to one megabit per second upload.
 - d. Provide Wireless-G router capable of supporting a minimum of four users simultaneously for field office trailer occupied by Remediation Contractor, NYSEG, and Remediation Engineer.
 - e. Set up system and appurtenances required and verify functionality in each field office space.
- C. Should actions of utility companies delay the complete set up of field offices, Remediation Contractor shall provide temporary electricity, heat, telephone, and internet service as required at no additional cost to NYSEG.

2.03 FIELD OFFICE FURNISHINGS AND EQUIPMENT

- A. Provide the following furnishings and equipment each field office trailer:
 - 1. Desks: Four five-drawer desks, each five feet long by 2.5 feet wide with at least one file drawer per desk suitable for storing 8.5-inch by 11-inch documents.

2. Desk Chairs: Four new or used (in good condition) five-point, high backed, cushioned swivel chairs.
3. Other Chairs: Ten metal folding chairs without arm rests.
4. Tables:
 - a. Two new or used (in good condition) portable folding tables, each eight feet long by 2.5 feet wide.
 - b. Two new or used (in good condition) portable folding tables, each six feet long by 2.5 feet wide.
5. Plan rack(s) to hold a minimum of eight sets of the Drawings.
6. Two four-drawer, legal size, fire-proof file cabinets with locks.
7. Four polyethylene waste baskets, each with minimum capacity of seven gallons.
8. Suitable doormat at each exterior ingress/egress door.
9. One tack board, approximately three feet long by 2.5 feet wide, with thumbtacks.
10. One white board for use with dry markers, approximately six feet long by four feet wide, with marker holding tray, installed by Remediation Contractor at location selected by Remediation Engineer in the field. Furnish supply of colored markers and eraser for the white board.
11. Fire extinguisher with associated signage, and smoke detector, in accordance with Laws and Regulations. At a minimum, provide two wall-mounted fire extinguishers and one battery-operated, ceiling-mounted smoke detector. Comply with fire protection requirements of Section 01 51 00 - Temporary Utilities.
12. One first-aid station. Comply with Section 01 52 16 - First-Aid Facilities.
13. Two electric clocks.
14. One electric coffee maker with ten-cup capacity or larger.
15. One microwave oven with minimum capacity of 0.9 cubic foot.
16. Two refrigerators, each with minimum capacity of 2.5 cubic feet.
17. Bottled water with electric cooler dispenser for five-gallon bottles, with cup dispenser.
18. Multifunction Printer:
 - a. Two new or used (in good condition) machines with the following functions:
 - 1) Photocopying.
 - 2) Network printing.
 - 3) Scanning to produce PDF and JPG files.
 - 4) E-mail.
 - 5) Fax via telephone line.
 - b. Products and Manufacturers: Provide one of the following:
 - 1) Brother MFC-j430w printer.
 - 2) Approved equal.
 - c. Provide necessary cables and appurtenances to enable all functions specified in this Section, including scan-and-email and printing from field office computers.
19. Telephone System:
 - a. Telephone System Features:
 - 1) Provide two cordless telephones, each with hands-free speaker, speed dialing with minimum of 16 programmable numbers, volume control, LCD display, and buttons for hold and mute.
 - 2) Set up and verify operation of each telephone set.
 - b. Provide two digital telephone answering machines.
- B. Provide two-way portable radios and charging units for Remediation Engineer, and key Remediation Contractor personnel (e.g., superintendent, foreman, etc.).

2.04 STORAGE AND WORK SHEDS

- A. Provide storage and work sheds sized, furnished, and equipped to accommodate personnel, materials, and equipment involved in the Work, including temporary utility services and

facilities required for environmental controls sufficient for personnel, materials, and equipment.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install field offices and related facilities in accordance with Laws and Regulations.
- B. Install materials and equipment, including pre-fabricated structures, in accordance with manufacturer's instructions.

3.02 CLEANING, MAINTENANCE, AND SUPPLIES

- A. Provide the following maintenance services:
 - 1. Immediately repair malfunctioning, damaged, leaking, or defective field offices, sheds, site improvements, systems, and equipment.
 - 2. Promptly provide snow removal for field offices, including parking areas, walkways, and stairs and landings.
 - 3. Provide continuous maintenance and janitorial service of field offices and sanitary facilities. Clean field offices at least once per week.
 - 4. Properly dispose of trash as needed, at least twice per week. Dispose of other waste, if any, as required, to avoid creation of nuisances.
- B. Provide the following consumables as needed:
 - 1. Light bulbs for interior and exterior lights.
 - 2. Toner or ink cartridges for multifunction printers, as required.
 - 3. Paper supplies for multifunction printers.
 - 4. Dry markers in six colors and white board eraser set.
 - 5. Bottled water suitable for water dispensers and disposable cups.
 - 6. Coffee supplies, including disposable cups, filters, coffee, sugar, creamer, and stir-sticks.
 - 7. Soap, paper towels, cleansers, sanitary supplies, and janitorial implements, including broom.
 - 8. Batteries for smoke detector and other battery-powered items furnished by Remediation Contractor.
 - 9. Replace fire extinguishers upon expiration.
 - 10. Replenish contents of first-aid kits as required.

3.03 REMOVAL

- A. Do not remove field offices and sheds until after Substantial Completion. Restore areas upon removal and prior to final inspection.

END OF SECTION

SECTION 01 52 16

FIRST-AID FACILITIES

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. Remediation Contractor shall provide first-aid facilities during the Project.
 - a. Pay all costs for first-aid facilities, including installation, maintenance, and removal.
 - b. Maintain, including cleaning, first-aid facilities. Keep first-aid facilities continuously supplied with consumables.
 - c. Facilities shall be adequate for personnel using the site and requirements of the Project.
 - d. Provide facilities in compliance with Laws and Regulations.

1.02 REFERENCE STANDARDS

- A. The following standards are referenced in this Section:
 - 1. ANSI Z308.1, Minimum Requirements for Workplace First Aid Kits and Supplies.
 - 2. ANSI Z358.1, Emergency Eye Wash and Shower Equipment.

1.03 REQUIREMENTS FOR FIRST-AID FACILITIES

- A. Provide temporary first-aid stations at or immediately adjacent to the site's major work areas, and inside the temporary field office. Locations of first-aid stations shall be determined by Remediation Contractor's safety representative. At a minimum, first-aid stations provided shall include:
 - 1. One first-aid kit complying with ANSI Z308.1.
 - 2. One eyewash station complying with ANSI Z358.1.
- B. Provide list of emergency telephone numbers at each hardwired telephone at the site. List shall be in accordance with the list of emergency contact information required in Section 01 35 29 – Remediation Contractor's Health and Safety Plan.
- C. When Work is in progress, provide at the site at least one person trained in first-aid and cardiopulmonary resuscitation (CPR). First-aid- and CPR-trained personnel shall possess valid certificate indicating that they have successfully completed a first-aid and CPR training course by the American Red Cross or similar entity.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Location of temporary first-aid facilities shall be as specified in Article 1.03 of this Section.

3.02 USE

- A. Properly supervise temporary first-aid facilities.
- B. Properly dispose of wastes.
- C. Check temporary first-aid stations not less than weekly and verify that sufficient consumables are available. Provide additional consumables if the supply on hand is insufficient.

3.03 REMOVAL

- A. Completely remove temporary first-aid facilities and materials when no longer required. Repair damage caused by temporary first-aid facilities and their removal, and restore the site to condition required by the Contract Documents. If restoration of damaged areas is not specified, restore to pre-construction condition.

END OF SECTION

SECTION 01 52 19

SANITARY FACILITIES

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Remediation Contractor shall provide all temporary sanitary facilities required for the Project.
 - 1. Make all arrangements with temporary sanitary facility companies for temporary sanitary services and obtain required permits and approvals for temporary sanitary services.
 - 2. Pay all temporary sanitary facility service costs, including cost of electricity, water, fuel, and other utility services required for the Work.
 - 3. Continuously maintain, including cleaning, adequate temporary sanitary facilities for all purposes during the Project, until removal of temporary sanitary facilities. At minimum, provide and maintain temporary sanitary facilities through Substantial Completion and removal of temporary field offices and sheds. Provide consumables as required.
 - 4. Provide temporary sanitary facilities in compliance with Laws and Regulations and, when applicable, requirements of utility owners.

1.02 REQUIREMENTS FOR TEMPORARY SANITARY FACILITIES

- A. Sanitary Facilities.
 - 1. Provide and maintain a minimum of two suitably-enclosed chemical or self-contained toilets and suitable temporary washing facilities for employees and visitors to the site. Location of temporary toilets shall be acceptable to NYSEG.
 - 2. Provide supply of potable drinking water and related facilities and consumables for all personnel using the site.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Materials and equipment for temporary sanitary facilities may be new or used, but shall be adequate for purposes intended and shall not create unsafe conditions, and shall comply with Laws and Regulations including 29 CFR Parts 1910 and 1926.
- B. Provide required materials, equipment, and facilities, including piping, wiring, and controls.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. Install temporary sanitary facilities in neat, orderly, manner, and make structurally, mechanically, and electrically sound throughout.
- B. Location of Temporary Sanitary Facilities:
 - 1. Locate temporary sanitary facilities for proper function and service at main staging area and any remote access/staging sites, as necessary.

2. Temporary sanitary facilities shall not interfere with or provide hazards or nuisances to: the Work under this and other contracts, movement of personnel, traffic areas, materials handling, hoisting systems, storage areas, finishes, and work of utility companies.
- C. Modify and extend temporary sanitary facilities as required by progress of the Work.
- 3.02 USE
- A. Maintain sanitary facilities to provide safe, continuous service as required.
- B. Properly supervise operation of sanitary facilities:
1. Enforce compliance with Laws and Regulations.
 2. Enforce safe practices.
 3. Prevent abuse of services.
 4. Prevent nuisances and hazards caused by temporary sanitary facilities and their use.
 5. Prevent damage to finishes.
 6. Ensure that temporary sanitary facilities do not interrupt continuous progress of construction.
- C. At the end of each work day, check sanitary facilities and verify that sufficient consumables are available to maintain operation until work is resumed at the site. Provide additional consumables if the supply on hand is insufficient.
- 3.03 REMOVAL
- A. Completely remove temporary sanitary facilities and materials when no longer required. Repair damage caused by temporary sanitary facilities and their removal, and restore the site to condition required by the Contract Documents. If restoration of damaged areas is not specified, restore to pre-construction condition.

END OF SECTION

SECTION 01 53 53

TEMPORARY WATER TREATMENT AND MANAGEMENT

PART 1 - GENERAL

1.01 DESCRIPTION

A. Scope:

1. Remediation Contractor shall provide all labor, materials, equipment, and incidentals required to furnish, install, test, and place into satisfactory operation, a temporary water treatment system at the location shown and as specified herein. The temporary water treatment system shall include the material, equipment and incidentals required to: collect, store, convey, treat, and discharge all liquids generated during performance of the Work. Liquids that shall be handled, treated, and discharged include, but may not be limited to, the following:
 - a. Rainfall runoff which accumulates in excavation or containment areas.
 - b. Direct precipitation in excavation or containment areas.
 - c. Water generated from dewatering activities.
 - d. Water generated from decontamination activities.
 - e. Groundwater/surface water encountered during remedial activities.
 - f. Other water generated as a result of remedial activities.
2. Remediation Contractor shall provide all labor, materials, equipment, and incidentals required to provide power, and to operate and maintain the temporary water treatment system. The temporary water treatment system specified herein is a typical temporary water treatment system that was designed based on sound, industry-accepted design principles and consists of proven treatment technologies and configurations. Remediation Contractor shall have the opportunity to propose an alternate temporary water treatment system design, that at a minimum, shall meet the performance standards, design, construction, and operational intent established herein. The temporary water treatment system shall include the following major components:
 - a. Berms, containment, and collection sump
 - b. Influent storage/weir tanks
 - c. Centrifugal pumps
 - d. Bag filters
 - e. Zeolite resin vessels
 - f. Liquid-phase granular activated carbon (GAC) vessels
 - g. Effluent storage tanks
 - h. Conveyance pipe, hose, valves, and appurtenances
 - i. Flow meter and totalizer
 - j. Spare parts

B. Coordination:

1. Review installation procedures under this and other Sections and coordinate the installation of items that must be installed with, or before the temporary water treatment system.

C. Related Sections: Not Used

1.02 REFERENCES

A. Standards referenced in this Section are listed below:

1. American Society of Mechanical Engineers, (ASME).
2. American Society for Testing and Materials, (ASTM).
3. U.S. Department of Labor, Occupational Safety and Health Administration, (OSHA).
 - a. Safety and Health Standards 29 CFR 1910/1926.

1.03 QUALITY ASSURANCE

A. Manufacturer's Qualifications:

1. Equipment manufacturers shall have a minimum of five years' experience producing substantially similar equipment and shall be able to show evidence of at least five installations in satisfactory operation for at least five years.

B. Component Compatibility:

1. All components shall be specifically constructed for the specified service conditions and shall be integrated into the overall assembly by the Remediation Contractor.

1.04 SUBMITTALS

A. Action Submittals:

1. Shop Drawings:

- a. Complete layout and installation drawings for the equipment showing mounting details, dimensions, fitting locations, materials of construction, containment details, and updated system piping and instrumentation diagram (P&ID). Submit manufacturer's literature, catalog cuts, and specifications for major equipment, and for all appurtenances (piping, valves, instrumentation, etc.) showing performance data, electrical wiring and control diagrams, installation and operation instructions, and applicable certifications.

2. Operation and Maintenance Manual:

- a. Complete Operation and Maintenance Manual, including, but not limited to the following (as applicable): description of operation, start-up and testing procedures; normal (daily) operational procedures; normal and emergency shut down procedures; alarm responses; maintenance data and schedules; daily log sheet; equipment manufacturer's manuals; sampling plan and schedule; manufacturer's recommended spare parts inventory; and calibration and alignment information.

1.05 DELIVERY, STORAGE AND HANDLING

A. Packing, Shipping, Handling and Unloading:

1. Deliver materials to the Site to ensure uninterrupted progress of the Work. Deliver anchor bolts and anchorage devices which are to be embedded in cast-in-place concrete in ample time to prevent delay of that Work.

B. Storage and Protection:

1. Store materials to permit easy access for inspection and identification. Keep all material off the ground, using pallets, platforms, or other supports. Protect steel members and packaged materials from corrosion and deterioration.

C. Acceptance at Site:

1. All boxes, crates and packages shall be inspected by the Remediation Contractor upon delivery to the Site. Remediation Contractor shall notify the Remediation Engineer, in writing, if any loss or damage exists to equipment or components. Replace loss and repair damage to new condition in accordance with manufacturer's instructions.

PART 2 - PRODUCTS

2.01 EQUIPMENT PERFORMANCE

A. General:

1. The temporary water treatment system has been designed to treat collected liquids at a maximum instantaneous flow rate of 100 gallons per minute (gpm).
2. The temporary water treatment system has been designed to operate in "batch mode".
3. The temporary water treatment system does not have any instrumentation, controls, alarms, or telemetry necessary to operate the system unattended.
4. The temporary water treatment system has not been designed to operate in freezing temperatures. The Remediation Contractor shall winterize the system as needed to protect equipment, pipes, and other components from damage during periods of freezing weather.

2.02 EQUIPMENT

A. Berms, Containment, and Collection Sump

1. Remediation Contractor shall construct a containment area for the temporary water treatment system. The containment area shall be constructed in accordance with the Contract Drawings and the Remediation Contractor submittals. A portable pre-fabricated spill containment liner with berms may be considered for use as the containment area with Remediation Engineer approval.
2. The area to be used to stage the temporary water treatment system shall be graded and sloped to a low point to form a collection sump.
3. A minimum 8-inch high berm shall be constructed of gravel, or approved equal, around the perimeter of the temporary water treatment system containment area to provide secondary containment equal to a minimum of 110% of one effluent storage tank (approximately 21,000 gallons), and a one-year, 24-hour storm event of approximately 2 inches.
4. Non-woven geotextile fabric layers shall be installed above and below the high-density polyethylene (HDPE) liner and the ground surface. Specification for Non-woven geotextile fabric or approved equal are found in Section 31 05 19.13 Geotextiles for Earthwork. Non-woven geotextile shall be placed in accordance with Section 31 05 19.13, Geotextiles for Earthwork, Contract Drawings, and Remediation Contractor submittals.
5. The containment area shall be lined with a layer of 40-mil HDPE liner that shall be textured on both sides. Specifications for HDPE liner, or approved equal are found in Section 31 05 19.16, Geomembranes for Earthwork. The liner shall be installed continuously along the bottom of the containment area and sloped to an HDPE-lined sump to allow for collection of liquids. If more than one HDPE panel is required in the containment area, the panels shall be seamed by fusion welding in accordance with manufacturer's recommendations. The liner shall be extended over the top and outside face of the berm. The outside face of the liner shall be adequately secured to prevent displacement or wind uplift.

6. Crushed stone with a minimum thickness of 6 inches shall be installed on top of the HDPE liner to protect the liner from damage and serve as a non-slip working surface. Crushed stone shall be placed in accordance with Section 31 05 05, Aggregates for Earthwork, Contract Drawings, and Remediation Contractor submittals.
- B. Influent Storage/Weir Tanks
1. Influent storage/weir tanks shall be 18,100-gallon flip top weir tanks, by Rain for Rent, or approved equal. Minimum total influent storage capacity shall be 36,200 gallons.
 2. Influent storage/weir tanks shall be of steel construction and shall be equipped with inlet and outlet pipe connections, over and under weirs to induce settling of solids and capture of floatables, operable tops which can be opened by personnel for visual inspection and water level measurements, access stairs and guardrails meeting OSHA requirements, and liquid level gauge.
- C. Centrifugal Pumps
1. Centrifugal pumps shall be rated for 100 gpm and 100 feet of pumping head, and shall be model DV-80 by Rain for Rent, or approved equal.
 2. Each centrifugal pump shall have an installed spare, except for backwash pump. Backwash pump will also serve as the effluent discharge pump, if needed, based on the final location of the effluent storage tanks and the actual discharge location at the site.
- D. Bag Filters
1. Bag filters shall be model BF-180 by TIGG LLC, or approved equal, and shall be sized for a 100 gpm flow rate.
 2. Each bag filter system shall be equipped with bag filter housings, bag support baskets, legs, interconnecting piping, shutoff valves, sample taps (at inlet and outlet of each housing) and pressure gauges (at inlet and outlet of each housing).
 3. Piping and valves shall be configured to allow each bag filter system to operate in parallel or vessel flow isolation mode. Valves shall isolate individual housing from the filter process, allowing continuous service of the remaining housings during filter bag removal and replacement.
 4. Bag filter housings shall be carbon steel construction built to ASME pressure vessel standards and shall be rated for a maximum working pressure of 150 psi.
 5. Effluent bag filter housings shall be capable of utilizing 0.5-micron high efficiency bag filters.
- E. Zeolite Resin Vessel
1. Zeolite resin vessel shall be CP-3000 by TIGG Corp., or approved equal. Each unit shall be filled with 6,000 pounds of Hydrosil HS-200 media, or approved equal, for the removal of residual oils and metals.
 2. Zeolite resin vessels shall be skid-mounted and each vessel shall have a minimum loaded hydraulic capacity of 100 gpm.
- F. Liquid Phase GAC Vessels
1. GAC units shall be CP-3000 by TIGG Corp., or approved equal. Each unit shall be filled with 3,000 lbs. of TIGG virgin coal based liquid phase carbon, or approved equal.
 2. GAC vessels shall be skid-mounted and each vessel shall have a minimum loaded hydraulic capacity of 100 gpm. The treatment train shall have two units in series.
 3. GAC vessels shall be designed for a down flow application and a carbon dry fill opening in the top. All vessel fittings shall be installed by the GAC vessel manufacturer at the time and place of manufacture.
 4. Water to be treated shall have a minimum empty bed contact time of 15 minutes per vessel at 100 gpm.

5. Water shall be routed through the GAC vessels in series during normal treatment system operations. When the primary GAC vessel becomes spent (i.e., breakthrough of constituents above permitted limits or other proposed action levels), the Remediation Contractor will perform a carbon change-out of the primary vessel. The secondary vessel shall be moved to the primary position and a new GAC vessel shall be placed in the secondary position.
- G. Effluent Storage Tanks
1. Effluent storage tanks shall be 21,000 gallon bi-level tanks, by Rain for Rent, or approved equal. Minimum total effluent storage capacity shall be 42,000 gallons.
 2. Effluent storage tanks shall be of steel construction and shall be equipped with inlet and outlet pipe connections and removable top which can be opened by personnel for visual inspection and water level measurements, access stairs and guardrails meeting OSHA requirements, and liquid level gauge.
- H. Conveyance Pipe, Hose, Valves, and Appurtenances
1. Remediation Contractor shall provide all necessary piping, hose, valves, and appurtenances required for installation and operation of the temporary water treatment system.
 2. Piping located inside the temporary water treatment system containment area shall be PVC Schedule 80 by JM Eagle, or approved equal. Hoses shall be Versiflo 150 by Goodyear Tire and Rubber Co., Inc., or approved equal. Piping located outside the temporary water treatment system containment area shall be single wall, HDPE SDR 11 with butt fused connections. HDPE Pipe shall be Driscopex® by Performance Pipe, CP Chemical Co.
 3. Pressure gauges shall be XSEL Type 232.34 by Wika Instrument, LP. Pressure gauge range shall be 0 psi to 60 psi.
 4. Piping, hose, valves, and appurtenances shall conform to applicable ASTM standards.
 5. Piping shall be secured to prevent displacement, supported in accordance with manufacturer's instructions, and protected from vehicular traffic when placed on ground surface.
- I. Flow Meter/Totalizer
1. Flow meter shall be 3-inch Recordall® Turbo 450 by BadgerMeter, Inc., or approved equal.
 2. Flow meter shall be capable of displaying instantaneous and totalized flow locally. Flow meter shall be equipped with totalizer model ER-10 by BadgerMeter, Inc., or approved equal.
- J. Spare Parts
1. Remediation Contractor shall furnish spare parts and accessories necessary to operate and maintain the temporary water treatment system for the duration of the Work.
 2. Stock equipment manufacturer's recommended spare parts at the site. Spare parts shall be identical and interchangeable with original equipment parts.
 3. Stock spare schedule 80 PVC pipe, fittings, valves, transfer hose, and pressure gauges, necessary to make timely repairs to the temporary water treatment system conveyance piping.
 4. Store spare parts in secure location in accordance with manufacturer's instructions.

PART 3 - EXECUTION

3.01 GENERAL

- A. Install, operate, and maintain temporary water treatment system in accordance with the Contract Documents, approved submittals, and manufacturer's instructions and requirements; and so as to not exceed the substantive requirements for water discharge limitations identified in the Clyde WWTP Discharge Permit to be obtained prior to remedial construction.

3.02 TESTING AND STARTUP ACTIVITIES

- A. Perform temporary water treatment system startup, testing, and troubleshooting activities prior to initiating full scale (normal) operations. Startup and testing activities shall be in accordance with equipment manufacturer's recommendations and as indicated in the Remediation Contractor prepared O&M Manual which has been reviewed by the Remediation Engineer.
- B. General startup and testing of the temporary water treatment system shall consist of treating a minimum of 10,000 gallons of water collected from the first proposed excavation area (i.e., water that has been in contact with soil to be disturbed). During the startup test, the temporary water treatment system shall be operated at the 100 gpm peak flow rate until the entire 10,000-gallon batch is treated. The Remediation Contractor shall continuously monitor and record readings (every 15 minutes, minimum) from all pressure gauges, flow meters, and other installed instrumentation necessary to demonstrate that the system is operating as designed, including backwash, by-pass, and recycle functions, to the satisfaction of the Remediation Engineer.
- C. Remediation Engineer shall collect start-up testing water samples following treatment of approximately 3,000 gallons, 6,000 gallons and 10,000 gallons of water. The entire 5,000 gallons of treated water shall be retained in the effluent storage tanks until analytical results indicate that water may be discharge. Samples collected during start-up shall be submitted for laboratory testing in accordance with the SPDES Equivalency Permit and the parameter list presented in the following table:

**TABLE 01 53 53-A
LABORATORY TESTING PARAMETERS**

| Parameter – USEPA Method No. | Influent/Effluent | Mid-Process |
|---|--------------------------|--------------------|
| Volatile Organic Compounds (VOCs) - 624 | Yes | Yes |
| Semi-Volatile Organic Compounds (SVOCs) - 625 | Yes | Yes |
| Metals – 200.7 | Yes | Yes |
| Total Suspended Solids (TSS) - 160.2 | Yes | Yes |
| Notes: Mid-process samples shall be collected downstream of the zeolite resin vessels, liquid-phase GAC vessels, and bag filters. Samples shall be collected during general startup testing of the system and during normal operations. Some or all of these mid-process locations may be eliminated as operating experience is gained. | | |

3.03 COLLECTION OF LIQUIDS

- A. Liquid that requires handling, treatment, and disposal shall be collected and transferred to the temporary water treatment system. The method(s) by which water is collected shall be area-specific, and shall be conducted in a manner that prohibits the spillage, leakage, or other release of liquid as collected.

- B. Maintain timely and accurate records concerning the volumes and areas from which accumulated liquids are removed and transported to the temporary water treatment system.
- C. Equipment utilized to collect/handle accumulated liquids, including pumps, tanks, and tanker trucks, as appropriate, shall be decontaminated prior to removal from the site.

3.04 HANDLING AND STORAGE OF LIQUIDS

- A. Store liquids in containers acceptable to the Remediation Engineer and NYSEG. Storage containers may be reused by the Remediation Contractor, unless otherwise directed by the Remediation Engineer.
- B. Storage containers shall be clearly marked to indicate the known or suspected contents, source area(s), and date(s) of generation.

3.05 WATER QUALITY TESTING

- A. Temporary water treatment system water quality testing shall be conducted during normal operations. During the first month of operation, testing shall be conducted once per week. During and after the second month of operation, extending until system shutdown, testing shall be conducted once per month. Note, water quality testing may have to be conducted more frequently, dependent on the Clyde WWTP Permit requirements. Operational sampling shall be collected in accordance with the table in Section 3.02.
- B. Notify Remediation Engineer and NYSEG regarding any operational, sampling, or effluent discharge issues that may not comply with permit limitations.

3.06 ROUTINE MONITORING

- A. The temporary water treatment system shall initially be manually operated and controlled through a series of valves, visual reading gauges, and pump controls as necessary to accommodate system operation. Remediation Contractor shall provide an experienced operator to be onsite during temporary water treatment system operation. While the system is operating, the operator shall have no other duties that interfere with the manual operation of the temporary water treatment system. As operating experience is gained, the Remediation Contractor may add additional controls and alarms approved by Remediation Engineer to eliminate the need for a dedicated onsite system operator.
- B. The Remediation Contractor prepared O&M manual shall describe the routine activities to be conducted at least once per shift by the temporary water treatment system operator. Activities should be in accordance with equipment manufacturer's requirements and recommendations. Those activities shall include, but not be limited, to the following:
 - 1. Verify that valves are positioned properly, to fill and drain the tanks as applicable.
 - 2. Visual inspection of piping, hoses, and valves noting damage, leakage, or other defects.
 - 3. Visual inspection of storage tanks noting water levels, damage, leakage, corrosion, or other defects. When tanks are emptied, the sediment thickness in the bottom of the tank shall be gauged and recorded. If sediment is observed to be 4 inches deep, or if directed by the Remediation Engineer, the tank shall be cleaned. Liquids resulting from cleaning activities shall be treated using the temporary water treatment system, and solids shall be collected for subsequent disposal.
 - 4. Visual inspection of pumps and equipment noting excessive noise or vibration, damage, leakage, corrosion, or other defects.

5. Obtain readings from temporary water treatment system pressure gauges associated with the different treatment processes within the treatment train(s). Pressure gauge readings shall be utilized to determine when a backwash event or filter replacement is required, or a particular treatment unit is not functioning properly.
6. Obtain readings from the system flow meter totalizer to monitor system flow rate, totalized flow to date, and daily flow total.
7. Visual inspection of containment liner noting damage, standing water, or other
8. Remediation Contractor shall collect, at a minimum once per day, water quality field data consisting of turbidity and pH measurements to provide indications of system performance. As operating experience is gained and following approval of the Remediation Engineer, the Remediation Contractor may reduce the frequency of the monitoring. Samples shall be collected in the individual treatment trains at the following locations:
 - a. Influent storage/weir tanks
 - b. Upstream of bag filter units
 - c. Downstream of zeolite resin vessels
 - d. Downstream of liquid-phase GAC units

3.07 CORRECTIVE ACTIONS

- A. At the direction of NYSEG or Remediation Engineer, the Remediation Contractor shall take corrective actions necessary to maintain specified treatment system performance in the event of an upset condition and/or operating conditions that result in non-compliant effluent water quality. During corrective actions, the Remediation Contractor may be required by NYSEG or Remediation Engineer to mobilize additional effluent storage tanks, improved equipment, and/or repeat start-up and testing procedures as specified herein. If the Remediation Contractor fails to make these corrections, or if the improved equipment fails to meet specified requirements, NYSEG, notwithstanding having made partial payment for work and materials which have entered into the manufacture of said equipment, may reject said equipment and order the Remediation Contractor to remove it from the premises at the Remediation Contractor's expense.

3.08 DOCUMENTATION

- A. Remediation Contractor shall maintain a daily operations log (i.e., tabulated results) in which the process variables described above shall be recorded. In addition, all activities related to O&M of the temporary water treatment system shall be documented in the daily log. The daily log shall be kept onsite and shall be made available to the Remediation Engineer on demand.

END OF SECTION

SECTION 01 55 13

TEMPORARY ACCESS ROADS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Remediation Contractor shall provide temporary construction roads, walks, parking areas, and appurtenances required during the Project for use by Remediation Contractor, other contractors employed on the Project, NYSEG's, and emergency vehicles.
2. Temporary roads and parking areas shall be designed and maintained by Remediation Contractor and shall be fully passable to vehicles in all weather conditions.

B. Use of Existing Access Roads:

1. Remediation Contractor is allowed to use existing roads upon the Effective Date of the Agreement.
2. Prevent interference with traffic on existing roads and parking areas. At all times, keep access roads and entrances serving the site clear and available to NYSEG, NYSEG's employees, emergency vehicles, and other contractors. Do not use access roads or site entrances for parking or storage of materials or equipment.
3. Remediation Contractor shall indemnify and hold harmless NYSEG and Remediation Engineer from expenses caused by Remediation Contractor's operations over existing roads and parking areas.
4. Schedule deliveries to minimize use of driveways and site entrances.

1.02 SITE ACCESS

A. Site Access:

1. Remediation Contractor access to the site shall be via the site entrance located at approximately 16 Sodus Street in Clyde, New York.
2. Remediation Contractor shall comply with public roadway requirements for weight and height.

1.03 REMEDIATION CONTRACTOR PARKING

- A. Remediation Contractor employee vehicles shall park in area(s) designated on the Design Drawings.
- B. Park construction vehicles and equipment in work areas off of permanent roads and parking areas, in areas of the site designated for Remediation Contractor staging.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Materials for temporary roads and parking areas shall comply with the Contract Documents.
- B. Traffic controls shall comply with requirements of authorities having jurisdiction.

PART 3 – EXECUTION

3.01 TEMPORARY ROADS AND PARKING AREAS

- A. Temporary Roads and Parking in Areas Different from Permanent Pavement:
 - 1. Provide temporary roads and parking areas adequate to support and withstand traffic loads during the Project.
 - 2. Provide reasonably level, graded, well-drained subgrade of satisfactory soil material, compacted to at least 95 percent of maximum dry density in the upper six inches.
 - 3. Where required to support loads and provide separation between subgrade and subbase materials, provide geotextile, or geogrid as required.
 - 4. Provide crushed stone or gravel subbase material a minimum of six inches thick, roller-compacted to level, smooth, dense surface. Subbase for temporary roads and areas traveled by construction vehicles shall be adequate for loads and traffic served.

3.02 TRAFFIC CONTROLS

- A. Traffic Controls:
 - 1. Provide temporary traffic controls at intersections of temporary roads, including intersections with other temporary roads, intersections with public roads, and intersections with permanent access roads at the site.
 - 2. Provide warning signs on permanent roads and drives, and provide “STOP” signs for traffic on temporary roads where required and at entrances to permanent pavement.
 - 3. Comply with requirements of authorities having jurisdiction.

3.03 MAINTENANCE OF ROADS

- A. General:
 - 1. Maintain temporary roads and parking to continuously provide at the site access for construction vehicles and trucks, NYSEG vehicles, deliveries for NYSEG, emergency vehicles, and parking areas for NYSEG’s personnel.
 - 2. Public roads shall be passable at all times unless a road closure is allowed in writing by authority having jurisdiction.
 - 3. When granular material of temporary roads and parking without hard surfacing become intermixed with soil or when temporary roads otherwise create a nuisance, remove intermixed granular-and-soil material and replace with clean aggregate as required.
- B. Cleaning and Dust Control:
 - 1. Cleaning: Clean paved surfaces over which construction vehicles travel. Perform cleaning a minimum of once per day when construction vehicles are traveling over roads (or more frequently as directed by Remediation Engineer), by mechanical sweeping. Clean the following surfaces:
 - a. Roads within limits of the Project.
 - b. Permanent roads at the site, between the site entrance and the work areas, between the site entrance and construction parking and staging areas.
 - c. Public roads that require sweeping and cleaning due to construction operations.
 - 2. Dust Control:
 - a. Control dust resulting from construction activities to prevent nuisances at the site and in nearby areas.
 - b. Apply water or use other methods subject to Remediation Engineer’s acceptance that will minimize airborne dust. Do not use water when water will cause hazardous or objectionable conditions such as mud, ponds, and pollution.

- c. Provide dust control that is non-polluting and does not contribute to tracking-out of dirt and dust onto pavement. Re-apply dust control treatment as required.
 - d. Comply with Section 01 57 00 - Temporary Controls.
- C. Protection of Underground Facilities: Provide temporary, heavy-duty steel roadway plates to protect existing, manholes, handholes, valve boxes, vaults, and other Underground Facilities near to or visible at the ground surface.

3.04 REMOVALS AND RESTORATION

- A. Removals:
 - 1. Remove temporary roads, walks, and parking areas unless otherwise indicated in the Contract Documents or requested by NYSEG. Return areas of temporary roads, walks, and parking to pre-construction condition unless otherwise indicated in the Contract Documents or requested by NYSEG. Remove temporary gates, fencing, and traffic controls associated with temporary roads and parking areas unless otherwise indicated in the Contract Documents or requested by NYSEG.
- B. Restoration:
 - 1. Repair or replace paving, curbs, gutters, and sidewalks affected by temporary roads and parking, and restore to required conditions in accordance with authorities having jurisdiction.
 - 2. Restore to pre-construction conditions existing roads, walks, and parking areas damaged by Remediation Contractor, subject to approval of the owner of affected roads, walks, and parking areas.

END OF SECTION

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SECTION 01 57 00

TEMPORARY CONTROLS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Providing and maintaining methods, equipment, materials, and temporary construction as required to control environmental conditions at the site and adjacent areas.
2. Maintaining temporary controls until no longer required.
3. Temporary controls include, but are not limited to, the following:
 - a. Erosion and sediment controls.
 - b. Control of surface water, including storm water run-off.
 - c. Odor, vapor, and dust controls.
 - d. Pollution controls.
 - e. Noise controls.

B. Related Sections:

1. Section 01 35 43.13 - Environmental Procedures for Hazardous Materials
2. Section 01 35 49 - Community Air Monitoring Plan
3. Section 01 41 26 - Storm Water Pollution Prevention Plan and Permit
4. Section 01 74 13 - Progress Cleaning
5. Section 31 11 00 - Clearing and Grubbing
6. Section 31 23 00 - Excavation and Fill
7. Section 32 90 00 - Planting

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:

1. American Association of State Highway and Transportation Officials (AASHTO) M 288, Standard Specification for Geotextile Specification for Highway Applications.
2. American Society for Testing and Materials (ASTM) D4751, Standard Test Method for Determining Apparent Opening Size (AOS) of a Geotextile.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with applicable provisions and recommendations of the following:
 - a. New York State Department of Environmental Conservation (NYSDEC) New York State Standards and Specifications for Erosion and Sediment Control.
 - b. NYSDEC Spill Guidance Manual.
 - c. New York State Department of Transportation (NYSDOT) Standard Specifications and Standard Sheets.
 - d. Village of Clyde Codes.

1.04 SUBMITTALS

A. Action Submittals:

1. Submit the following plans (separate or as part of the Remediation Contractor's Project Operation Plan):
 - a. Erosion and Sediment Control Plan.

- b. Surface Water Control Plan.
- c. Odor, Dust, and Vapor Control Plan.
- d. Pollution Control Plan.
- e. Noise Control Plan.
- 2. Product Data: Submit manufacturer's product data, specifications, and installation instructions for the following:
 - a. Silt fencing.
 - b. Erosion control mats or netting, and staples or anchoring stakes.
 - c. Vapor mitigation agents and proposed application and storage equipment for each.

PART 2 – PRODUCTS

2.01 EROSION AND SEDIMENT CONTROLS

- A. General:
 - 1. Use erosion and sediment control materials that are in accordance with the applicable regulatory requirements indicated in Article 1.03 of this Section, unless otherwise shown or indicated in the Contract Documents.
- B. Silt Fencing:
 - 1. Filter Fabric:
 - a. Material: Geotextile shall comply with AASHTO M 288 specifications for temporary silt fence.
 - b. Height: Two feet, minimum.
 - 2. Fence Support Posts:
 - a. Material: Hardwood or steel posts may be used.
 - 1) Hardwood posts shall be at least 2 inches by 2 inches in cross section.
 - 2) Steel posts shall be "T" or "U" shape in cross section with a minimum weight of 1.0 pound per linear foot.
 - b. Length: Four feet, minimum.
 - 3. Fabric fasteners shall be heavy-duty staples, wire ties, or other fastener compatible with support post material.
- C. Compost Filter Sock:
 - 1. Place compost filter sock at existing level grade. Extend both ends of the sock at least 8 feet up slope at 45 degrees to main sock alignment.
 - 2. Size and design compost filter socks in accordance with the tables provided in the New York Standards and Specifications for Erosion and Sediment Control.
- D. Temporary Plantings:
 - 1. Annual Ryegrass: Provide fresh, clean, new-crop seed with not less than 95 percent germination, not less than 80 percent pure seed, and not more than 0.25 percent weed seed by weight.
 - 2. Aroostook Winter Rye: Provide fresh, clean, new-crop seed with not less than 95 percent germination, not less than 80 percent pure seed, and not more than 0.25 percent weed seed by weight.
- E. Mulch and Soil Stabilization:
 - 1. Straw mulch shall be clean, dry, and seed-free salt hay or threshed straw of wheat, rye, oats, or barley.
 - 2. Soil stabilization emulsions, when used, shall be an inert, eco-friendly chemical manufactured for the specific purpose of erosion control and soil stabilization, applied with mulch or stabilization fibers.

3. Wood-fiber or paper-fiber, when used, shall be 100 percent natural and biodegradable.
 4. Erosion Control Blankets: Type 3.B, in accordance with FHWA FP-03, Section 713.17.
 - a. Product and Manufacturer: Provide one of the following:
 - 1) ECSC-2B, by East Coast Erosion Blankets, LLC.
 - 2) Curlex II FibreNet, by American Excelsior Company.
 - 3) Or equal.
 - b. Erosion control blankets shall be 100 percent natural and biodegradable. Acceptable materials include jute, excelsior, straw or coconut fiber, and cotton.
 - c. Staples or anchoring stakes shall be 100 percent biodegradable.
- F. Straw Bale Dike:
1. Bales shall be firmly-packed, unrotted straw bound firmly with intact bailing wire. Cross-sectional area on the small end of each bale shall be approximately 12 inches by 12 inches or larger.
 2. Posts shall comply with requirements for silt fencing support posts, or may be suitable reinforcing steel.
- G. Temporary Construction Entrance:
1. Crushed stone shall be clean, durable, sharp-angled fragments of rock of uniform quality conforming to Material Designation 703-0102, Size Designation No. 3, in accordance with Section 703 of the NYSDOT Standard Specifications.

2.02 ODOR, VAPOR, AND DUST CONTROLS

- A. Vapor Mitigation Agents: Provide the following:
1. BioSolve® Pinkwater®, by The BioSolve Company.
 2. AC-645 Long-Duration Foam, by Rusmar, Inc.
- B. Water: Clean, potable.
- C. Provide pressure washers, pneumatic foam unit, portable tanks, hoses, and other equipment required for the storage and application of vapor mitigation agents and water.

PART 3 – EXECUTION

3.01 EROSION AND SEDIMENT CONTROL

- A. Installation and Maintenance – General:
1. General:
 - a. Provide erosion and sediment controls as shown and indicated on the Design Drawings and elsewhere in the Contract Documents. Provide erosion and sediment controls as the Work progresses into previously undisturbed areas.
 - b. Install erosion and sediment controls in accordance with applicable regulatory requirements indicated in Article 1.03 of this Section, unless otherwise shown or indicated in the Contract Documents.
 - c. Use necessary methods to successfully control erosion and sedimentation, including ecology-oriented construction practices, vegetative measures, and mechanical controls. Use best management practices in accordance with Laws and Regulations, and regulatory requirements indicated in Article 1.03 of this Section, to control erosion and sedimentation during the Project.
 - d. Plan and execute construction, disturbances of soils and soil cover, and earthwork by methods to control surface drainage from cuts and fills, and from borrow and waste disposal areas, to prevent erosion and sedimentation. Provide temporary measures

- for controlling erosion and sedimentation, as indicated in the Contract Documents and as required for the Project.
- e. Where areas must be cleared for storage of materials or equipment, or for temporary facilities, provisions shall be made for regulating drainage and controlling erosion and sedimentation, subject to Remediation Engineer's approval.
 - f. Provide erosion and sediment controls, including stabilization of soils, at the end of each work day.
- 2. Coordination:
 - a. Coordinate erosion and sediment controls with this Section's requirements on water control and with Section 01 41 26 - Storm Water Pollution Prevention Plan and Permit.
 - b. Coordinate temporary erosion and sediment controls with construction of permanent drainage facilities and other Work to the extent necessary for economical, effective, and continuous erosion and sediment control.
 - 3. Before commencing activities that will disturb soil or soil cover at the site, provide all erosion and sediment control measures required by the Contract Documents for the areas where soil or soil cover will be disturbed.
 - 4. In general, implement construction procedures associated with, or that may affect, erosion and sediment control to ensure minimum damage to the environment during construction. Remediation Contractor shall implement any and all additional measures required to comply with Laws and Regulations, and Section 01 41 26 - Storm Water Pollution Prevention Plan and Permit.
 - 5. Vegetation Removal:
 - a. Perform clearing, grubbing, and related operations in accordance with Section 31 11 00 - Clearing and Grubbing.
 - b. Remove only those shrubs, grasses, and other vegetation that must be removed for construction. Protect remaining vegetation.
 - 6. Access Roads and Parking Areas: When possible, access roads and temporary roads shall be located and constructed to avoid adverse effects on the environment. Make provisions to regulate drainage, avoid erosion and sedimentation, and minimize damage to vegetation.
 - 7. Earthwork and Temporary Controls:
 - a. Perform excavation, fill, and related operations in accordance with Section 31 23 00 - Excavation and Fill.
 - b. Control erosion to minimize transport of silt from the site into existing waterways and surface waters. Such measures shall include, but are not limited to, using berms, silt fencing, straw bale dikes, gravel or crushed stone, slope drains, and other methods. Apply such temporary measures to erodible materials exposed by activities associated with the construction of the Project.
 - c. Hold to a minimum the areas of bare soil exposed at one time.
 - d. Construct fills and waste areas by selectively placing fill and waste materials to eliminate surface silts and clays that will erode.
 - e. In performing earthwork, eliminate depressions that could serve as mosquito pools.
 - f. Provide special care in areas with steep slopes, and minimize disturbance of vegetation to maintain soil stability.
 - 8. Inspection and Maintenance:
 - a. Periodically inspect areas of earthwork and areas where soil or soil cover are disturbed to detect evidence of the start of erosion and sedimentation; apply corrective measures as required to control erosion and sedimentation. Continue inspections and corrective measures until soils are permanently stabilized and permanent vegetation has been established.
 - b. Inspect and report not less often than the frequency specified in Section 01 41 26 - Storm Water Pollution Prevention Plan and Permit.

- c. Repair or replace damaged erosion and sediment controls within one day of Remediation Contractor becoming aware of such damage.
 - d. Periodically remove silt and sediment that has accumulated in or behind sediment and erosion controls. Properly dispose of silt and sediment.
 - 9. Duration of Erosion and Sediment Controls:
 - a. Maintain erosion and sediment controls in effective working condition until the associated drainage area has been permanently stabilized.
 - b. Maintain erosion and sediment controls until the site is restored and site improvements including landscaping, if any, are complete with underlying soils permanently stabilized.
 - 10. Work Stoppage: If the Work is temporarily stopped or suspended for any reason, provide additional temporary controls necessary to prevent environmental damage to the site and adjacent areas while the Work is stopped or suspended.
 - 11. Failure to Provide Adequate Controls: In the event Remediation Contractor repeatedly fails to satisfactorily control erosion and siltation, NYSEG reserves the right to employ outside assistance or to use NYSEG's own forces for erosion and sediment control. Cost of such work, plus engineering and inspection costs, will be deducted from monies due to Remediation Contractor.
- B. Silt Fencing:
- 1. Install and maintain silt fencing in a vertical plane, at the location(s) shown or indicated on the Design Drawings.
 - 2. Locations of Silt Fencing:
 - a. Where possible, install silt fencing along contour lines so that each given run of fencing is at the same elevation.
 - b. On slopes, install silt fencing at intervals that do not exceed the maximum lengths indicated in Table 01 57 00-A.

**TABLE 01 57 00-A
MAXIMUM LENGTH OF SLOPE BETWEEN RUNS**

| Slope | Slope Length (feet) |
|--------------------|--------------------------------|
| 1:2 (50%) | 25 |
| 1:3 (33%) | 50 |
| 1:4 (25%) | 75 |
| 1:5 (20%) and Less | 100 |

- c. Provide silt fencing around the perimeter of each stockpile of topsoil, general fill material, and excavated material. Install silt fencing before expected precipitation and maintain until stockpile is removed.
 - d. Do not install silt fencing at the following types of locations:
 - 1) Area of concentrated storm water flows such as ditches, swales, or channels.
 - 2) Where rock or rocky soils prevent full and uniform anchoring of silt fencing.
 - 3) Across upstream or discharge ends of storm water piping or culverts.
- 3. Installation:
 - a. Securely fasten filter fabric to each support post in no less than four locations. Spacing between support posts shall not exceed 10 feet (center to center).
 - b. When two sections of filter fabric abut each other, fold over edges and overlap by minimum of six inches and securely fasten to wire mesh.
 - c. Embed posts in the ground to the depth necessary for proper controls, but not less than 16 inches below ground surface.
 - d. Filter fabric shall extend a minimum of six inches below ground and a minimum of 16 inches above ground.

- e. Filter fabric at bottom of silt fence shall be buried in a trench, in a "J" configuration, to a depth of six inches.
 - f. Remove sediment accumulated at silt fencing as required. Repair and reinstall silt fencing as required.
- 4. Maintenance:
 - a. Do not allow formation of concentrated storm water flows on slopes above silt fencing unless so shown or indicated in the Contract Documents. If unauthorized concentrated storm water flows occur, stabilize the slope via earthmoving and other stabilization measures as required to prevent flow of concentrated storm water flows toward silt fencing.
- C. Straw Bale Dike:
 - 1. Install straw bale dikes where shown or indicated, including in swales, along contours, and along toe of slopes. On slopes, install straw bale dikes at intervals that do not exceed the maximum lengths indicated in Table 01 57 00-A of this Section.
 - 2. Install bales in shallow excavation as wide as the bale and approximately four to six inches below surrounding grade.
 - 3. Ends of bale shall tightly abut ends of adjacent bales.
 - 4. Securely install straw bales using two support posts per bale, driven into the ground a minimum of 1.5 to two feet below bottom of bale. Top of post shall be flush with top of bale. Angle first post for each bale toward the previously-installed bale.
 - 5. Frequently inspect bales and repair or replace as required. Remove accumulated silt and debris from behind straw bales.
- D. Temporary Plantings:
 - 1. Use temporary plantings to provide interim protective cover in disturbed or bare-soil areas when preparing for seasonal (winter) shut-downs, or to provide temporary protective cover when permanent plantings are likely to fail due to mid-summer heat and drought.
 - 2. Perform seeding and related operations in accordance with Section 32 90 00 - Planting.
 - 3. Application of seed for temporary plantings shall be as follows:
 - a. Annual Ryegrass: Apply during the spring, summer, or early fall at a rate of 30 pounds per acre.
 - b. Aroostook Winter Rye: Apply during the late fall or early winter at a rate of 100 pounds per acre.
- E. Mulching and Soil Stabilization:
 - 1. Use mulching to temporarily stabilize exposed soil and fill material.
 - a. Immediately following final grading, provide mulch and stabilize with mats or netting, or sprayed soil stabilization emulsion with fiber additive.
 - b. Application of mulch for soil stabilization shall be as follows.
 - 1) Straw Mulch: Spread by hand or machine at an approximate rate of two tons per acre to form a continuous loose blanket not less than 1.5 inches in uniform thickness. Anchor mulch by an acceptable method.
 - 2) Soil stabilization emulsions, when used, shall be applied in accordance with manufacturer's instructions, and shall be applied with mulch or stabilization fibers.
 - 3) Wood-Fiber or Paper-Fiber Application: 1,500 pound per acre, installed by hydroseeding.
 - c. Install erosion control blankets where slopes exceed 1:6 (V:H).
 - 1) Cover entire area to be stabilized with erosion control blankets.
 - 2) Provide anchoring trenches at the top and bottom of slopes to receive erosion control blankets. Bury at least the top and bottom ends of erosion control blanket, four inches or more, at top and bottom of slope. Tamp trench full of soil. Four

inches from trench, secure erosion control blanket with appropriate stakes or staples spaced at intervals of 10 inches, or as recommended by the manufacturer.

- 3) Overlap adjacent strips of erosion control blanket by not less than four inches.

3.02 SURFACE WATER CONTROL

A. General:

1. Provide methods to control surface water to prevent damage to the Work, the site, and adjoining properties.
2. Control fill, grading, and ditching to direct surface water away from disturbed areas, excavations, pits, tunnels, and other construction areas, and to direct drainage to proper run-off courses to prevent erosion, damage, or nuisance.

B. Equipment and Facilities for Surface Water Control:

1. Provide, operate, and maintain equipment and facilities of adequate size to control surface water.

C. Discharge and Disposal:

1. Dispose of surface water in a manner to prevent flooding, erosion, and other damage to any and all parts of the site and adjoining areas, and that complies with Laws and Regulations.

3.03 ODOR, VAPOR, AND DUST CONTROL

A. General:

1. Provide means, methods, and facilities required to control MGP-related odors, vapors, and dust generated during the Work.
2. Proactively employ odor, vapor, and dust controls during the Work, and evaluate and modify construction techniques and site management practices, as necessary and appropriate, to:
 - a. Mitigate manufactured gas plant- (MGP-) related odor emissions to the extent practicable, and to the satisfaction of NYSEG, Remediation Engineer, and NYSDEC.
 - b. Prevent exceedances of the community air monitoring action levels specified in Section 01 35 49 - Community Air Monitoring Plan.
3. If Remediation Contractor's means, methods, and facilities are unsuccessful in controlling MGP-related odors, vapors, and dust as specified in this Section, based on visual observations or the results of community air monitoring, Work shall be suspended until appropriate corrective actions are taken by Remediation Contractor to remedy the situation to Remediation Engineer's satisfaction. NYSEG will not be liable for any expense or delay resulting from Remediation Contractor's failure to control MGP-related odors, vapors, and dust in accordance with this Section.

B. Vapor Mitigation Agents:

1. Mobilize vapor mitigation agents and means of storage and dispersion at the site before initiating any ground-intrusive Work or dust-generating Work.
2. Application of vapor mitigation agents shall be as follows:
 - a. BioSolve Pinkwater:
 - 1) Prepare three-percent solution of BioSolve® Pinkwater® concentrate and water. Apply to exposed soils and excavation faces using backpack sprayers, power washers, or misters.
 - 2) Apply when actively excavating, when actively handling excavated materials, and as required by NYSEG or Remediation Engineer.
 - b. AC-645 Long-Duration Foam:

- 1) Prepare 13-percent solution of AC-645 Long-Duration Foam concentrate and water. Apply to excavation faces and uncovered stockpiles of excavated materials using pneumatic foam unit. Completely and uniformly cover exposed soil surfaces with minimum three inches of foam.
 - 2) Apply before each work break, at the end of each work day, and as required by NYSEG or Remediation Engineer.
- C. Construction Techniques and Site Management Practices:
1. Excavate and backfill, and load, handle, and unload excavated materials and clean fill materials, in manner that minimizes the generation of airborne dust.
 2. Haul excavated materials and clean fill materials in properly covered vehicles.
 3. Restrict vehicle speeds on temporary access roads and active haul routes.
 4. Cover shallow excavations and stockpiles of clean fill materials with polyethylene liners before extended work breaks and at the end of each work day. Anchor liners to resist wind forces; slope to prevent accumulation of water.
 5. Hold to a minimum the areas of bare soil exposed at one time.
 6. Comply with progress cleaning requirements of Section 01 74 13 - Progress Cleaning.

3.04 POLLUTION CONTROL

- A. General:
1. Provide means, methods, and facilities required to prevent contamination of soil, water, and atmosphere caused by discharge of noxious substances from construction operations.
 2. Equipment used during construction shall comply with Laws and Regulations.
 3. Comply with Section 01 35 43.13 - Environmental Procedures for Hazardous Materials.
- B. Spills and Contamination:
1. Provide equipment, materials, and personnel to perform emergency measures required to contain and clean up spills, and to remove soils and liquids contaminated by spills.
 2. Provide spill kits, including oil-absorbent pads, socks, and booms, at or immediately adjacent to the site's major work areas and equipment storage and fueling areas.
 3. Immediately notify NYSEG or Remediation Engineer of all spills, regardless of material, volume, or circumstances involved. NYSDEC shall be notified by NYSEG or Remediation Engineer. A determination if the spill shall be reported or not will be made based on discussion with the NYSDEC.
 4. Excavate and properly dispose of contaminated material offsite, and replace with suitable compacted fill and topsoil.
- C. Protection of Surface Waters:
1. Implement measures to prevent harmful substances from entering surface waters. Prevent disposal of wastes, effluents, chemicals, and other such substances in or adjacent to surface waters and open drainage routes, in sanitary sewers, or in storm sewers.
- D. Atmospheric Pollutants:
1. Provide systems for controlling atmospheric pollutants related to the Work.
 2. Prevent toxic concentrations of chemicals and vapors.
 3. Prevent harmful dispersal of pollutants into atmosphere.
- E. Solid Waste:
1. Provide systems for controlling and managing solid waste related to the Work.
 2. Prevent solid waste from becoming airborne, and from discharging to surface waters and drainage routes.

3. Properly handle and dispose of solid waste.

3.05 NOISE CONTROL

- A. Minimize noise emissions from Remediation Contractor's vehicles, equipment, and operations to the greatest degree practicable. Provide mufflers, silencers, and sound barriers when necessary, or as directed by NYSEG or Remediation Engineer.
- B. Noise levels shall comply with all applicable Laws and Regulations, including OSHA requirements and local ordinances.
- C. Noise emissions shall not interfere with the Work of NYSEG or others.

3.06 PROHIBITED CONSTRUCTION PROCEDURES

- A. Prohibited construction procedures include, but are not limited to, the following:
 1. Dumping or disposing of spoil material, cleared vegetation, debris, or other waste material in any surface waters, drainage ways, or other unauthorized locations.
 2. Indiscriminate, arbitrary, or capricious operation of equipment in any surface waters, drainage ways, or other unauthorized locations.
 3. Pumping of silt-laden water from trenches or other excavations to any surface waters, drainage ways, sewers, or other unauthorized locations.
 4. Damaging vegetation beyond the extent necessary for construction.

3.07 REMOVAL OF TEMPORARY CONTROLS

- A. Remove temporary controls only when directed by NYSEG or Remediation Engineer.

END OF SECTION

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SECTION 01 58 13

TEMPORARY PROJECT SIGNAGE

PART 1 – GENERAL

1.01 SUMMARY

A. Scope:

1. Remediation Contractor shall furnish and install temporary signage as specified in this Section for Project identification and construction site information.
2. Temporary signs include:
 - a. Project identification signs.
 - b. Project contact signs.
 - c. Danger signs.
 - d. Security signs.
3. Do not display any other temporary signs, other than those specified, without prior approval of NYSEG.
4. Maintain temporary signs until Substantial Completion, or as otherwise directed by NYSEG.

1.02 SUBMITTALS

A. Action Submittals:

1. Shop Drawings: Submit Shop Drawings showing layout, text, font, character size, colors, graphics or logos (if any), materials of construction, and dimensions of each temporary sign, and the proposed locations and orientations of temporary signs at the site.

PART 2 – PRODUCTS

2.01 MATERIALS AND CONSTRUCTION

A. Project Identification Signs:

1. Project identification signs, including layout, fonts, logos, and colors, shall be as specified in the New York State Department of Environmental Conservation (NYSDEC) guidance document included with this Section.
2. Location: Mounted on fencing at the support area entrance.
3. Text Inserts: Text inserts shall be centered horizontally on sign board in the specified locations.
 - a. Program Name: "Manufactured Gas Plant (MGP) Program".
 - b. Site Name: "Clyde Former MGP Site".
 - c. Site Number: "859019".
 - d. Name of Party Performing Remedial Activities: "NYSEG".
 - e. Governor: "Andrew M. Cuomo, Governor". *(or current)*
 - f. Commissioner: "Basil Seggos, Commissioner". *(or current)*
 - g. Municipal Executive: "Jerry Fremouw, Mayor". *(or current)*
4. Background Color: White.
5. Text Height: 1.5 inches, minimum.
6. Printing: Digital or screen printing with ultraviolet-resistant inks.
7. Sign Board:
 - a. Material: Aluminum composite, minimum thickness of three millimeters.
 - b. Minimum Dimensions: 96 inches wide by 48 inches high.

8. Supports and Bracing: Provide supports and bracing as required to adequately support and brace signs for the duration of the Project.
 9. Obtain Remediation Engineer approval before releasing for manufacture.
- B. Project Contact Signs:
1. Location: Mounted on fencing at west site entrance next to Project identification sign.
 2. Text: Text shall be centered vertically and horizontally on sign board, and shall read as follows:
 - a. Line 1: "PROJECT CONTACTS".
 - b. Line 2: "NYSDEC FIELD OFFICE: 585-226-5315". Include actual telephone number assigned to NYSDEC field office where indicated on this line.
 - c. Line 3: "NYSDEC OFFICE (ALBANY, NEW YORK): 518.402.9662".
 - d. Line 4: "NYSDEC PROJECT MANAGER: MR. MICHAEL SQUIRE, 518.402.9546".
 - e. Line 5: "NYSEG PROJECT MANAGER: MR. JOHN J. RUSPANTINI, 607.762.8787".
 3. Background Color: White.
 4. Text Color: Black.
 5. Text Height: 1.5 inches, minimum.
 6. Printing: Digital or screen printing with ultraviolet-resistant inks.
 7. Sign Board:
 - a. Material: Aluminum composite, minimum thickness of three millimeters.
 - b. Minimum Dimensions: 96 inches wide by 48 inches high.
 8. Supports and Bracing: Provide supports and bracing as required to adequately support and brace signs for the duration of the Project.
 9. Obtain Remediation Engineer approval before releasing for manufacture.
- C. Danger Signs:
1. Location: Mounted on fencing at intervals of 100 linear feet and on either side of temporary site security gate (two signs per gate).
 2. Text: "DANGER" in upper panel and "CONSTRUCTION AREA AUTHORIZED PERSONNEL ONLY" in lower panel.
 3. Background Color: Red upper panel, black outline along border, and white lower panel.
 4. Text Color: White in upper panel and black in lower panel.
 5. Printing: Digital or screen printing with ultraviolet-resistant inks.
 6. Sign Board:
 - a. Material: Treated polyethylene, thickness of 0.055 inch.
 - b. Minimum Dimensions: 14 inches wide by 10 inches high.
 7. Supports and Bracing: Provide supports and bracing as required to adequately support and brace signs for the duration of the Project.
- D. Security Signs:
1. Location: Mounted on fencing on each side of temporary site security gate entrance (two signs per site entrance) and at entrances of each field office trailer (one sign per trailer entrance).
 2. Text: "SECURITY NOTICE" in upper panel and "ALL VISITORS MUST SIGN-IN AT THE FIELD OFFICE" in lower panel.
 3. Background Color: Yellow upper panel, black outline along border, and white lower panel.
 4. Text Color: Black for upper and lower panels.
 5. Printing: Digital or screen printing with ultraviolet-resistant inks.
 6. Sign Board:
 - a. Material: Treated polyethylene, thickness of 0.055 inch.
 - b. Minimum Dimensions: 20 inches wide by 14 inches high.
 7. Supports and Bracing: Provide supports and bracing as required to adequately support and brace signs for the duration of the Project.

PART 3 – EXECUTION

3.01 INSTALLATION, MAINTENANCE, AND REMOVAL

- A. Installation:
 - 1. Install temporary signs within 14 days of Remediation Engineer's approval of the submittal required by this Section.
 - 2. Obtain NYSEG and Remediation Engineer approval of installation locations before installing temporary signs.
- B. Maintenance:
 - 1. Maintain temporary signage so that signs are clean, legible, and upright. Cut grass, weeds, and other plants so that temporary signs are not covered or obscured.
 - 2. Repair or replace damaged temporary signs. Relocate signs as required by progress of the Project.
- C. Remove temporary signs upon Substantial Completion, or as otherwise directed by the Remediation Engineer.

3.02 ATTACHMENTS

- A. The attachment listed below, which follows after the "End of Section" designation, is part of this Specification Section:
 - 1. Attachment A: Signs for Remedial Programs (two pages).

END OF SECTION

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TEMPORARY PROJECT SIGNAGE
01 58 13 – 4
REVISION NO. 00
DATE ISSUED: MAY 2019

NYSEG
REMEDIAL DESIGN
CLYDE FORMER MGP SITE
VILLAGE OF CLYDE, WAYNE COUNTY, NEW YORK

SECTION 01 62 00
PRODUCT OPTIONS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. This Section includes:
 - a. Remediation Contractor's options for selecting products.
 - b. Requirements for consideration of "or-equal" products.

1.02 TERMINOLOGY

- A. The following words or terms are not defined but, when used in this Section, have the following meaning:
 - 1. "Products" includes materials, equipment, machinery, components, fixtures, systems, and other goods incorporated in the Work. Products do not include machinery and equipment used for preparing, fabricating, conveying, erecting, or installing the Work. Products include NYSEG-furnished goods incorporated in the Work where use of such goods is specifically required in the Contract Documents.

1.03 PRODUCT OPTIONS

- A. For products specified only by reference standard or description, without reference to Supplier, provide products meeting that standard, by a Supplier or from a source that complies with the Contract Documents.
- B. For products specified by naming one or more products or Suppliers, provide the named products that comply with the Contract Documents, unless an "or-equal" or substitute product is approved by Remediation Engineer.
- C. For products specified by naming one or more products or Suppliers and the term, "or equal", when Remediation Contractor proposes a product or Supplier as an "or equal", submit to Remediation Engineer a request for approval of an "or-equal" product or Supplier.
- D. For products specified by naming only one product or manufacturer and followed by words indicating that no substitution is allowed, there is no option and no substitution will be allowed.

1.04 "OR-EQUAL" PRODUCTS

- A. For proposed products not named in the Contract Documents and considered as an "or equal", Remediation Contractor shall request in writing Remediation Engineer's approval of the "or equal". Request for approval of an "or-equal" product shall accompany the Shop Drawing or product data submittal for the proposed product and shall include:
 - 1. Remediation Contractor's request that the proposed product be considered as an "or equal", accompanied by Remediation Contractor's certifications.

2. Documentation adequate to show that proposed product:
 - a. Does not require extensive revisions to the Contract Documents.
 - b. Is consistent with the Contract Documents.
 - c. Will produce results and performance required in the Contract Documents.
 - d. Is compatible with other portions of the Work.
3. Detailed comparison of significant qualities of proposed product with the products and manufacturers named in the Contract Documents. Significant qualities include attributes such as performance, weight, size, durability, visual effect, and specific features and requirements shown or indicated.
4. Evidence that proposed product manufacturer will furnish warranty equal to or better than specified, if any.
5. List of similar installations for completed projects with project names and addresses, and names and address of design professionals and owners, if requested.
6. Samples, if requested.
7. Other information requested by Remediation Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 65 00

PRODUCT DELIVERY REQUIREMENTS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. This Section includes general requirements for preparing for shipping, delivering, and handling materials and equipment.
 - 2. Remediation Contractor shall make all arrangements for transporting, delivering, and handling of materials and equipment required for prosecution and completion of the Work.
 - 3. When required, move stored materials and equipment without additional compensation and without changes to the Contract Times.

1.02 SUBMITTALS

- A. Refer to individual Specification Sections for submittal requirements relative to delivering and handling materials and equipment.

1.03 PREPARING FOR SHIPMENT

- A. When practical, factory-assemble materials and equipment. Match mark or tag separate parts and assemblies to facilitate field assembly. Cover machined and unpainted parts that may be damaged by the elements with strippable, protective coating.
- B. Package materials and equipment to facilitate handling, and protect materials and equipment from damage during shipping, handling, and storage. Mark or tag outside of each package or crate to indicate the associated purchase order number, bill of lading number, contents by name, NYSEG's contract name and number, Remediation Contractor name, equipment number, and approximate weight. Include complete packing lists and bills of materials with each shipment.
- C. Protect materials and equipment from exposure to the elements and keep thoroughly dry and dust-free at all times. Protect painted surfaces against impact, abrasion, discoloration, and other damage. Lubricate bearings and other items requiring lubrication in accordance with manufacturer's instructions.
- D. Keep Remediation Engineer informed of delivery of all materials and equipment to be incorporated in the Work.
- E. Do not ship materials and equipment until:
 - 1. Related Shop Drawings, Samples, and other submittals have been reviewed or accepted (as applicable) by Remediation Engineer, including, but not necessarily limited to, all Action Submittals associated with the materials and equipment being delivered.
 - 2. Manufacturer's instructions for handling, storing, and installing the associated materials and equipment have been submitted to and accepted by Remediation Engineer in accordance with the Specifications.

3. Results of source quality control testing (factory testing), when required by the Contract Documents for the associated materials or equipment, have been reviewed and accepted by Remediation Engineer.
4. Facilities required for handling materials and equipment in accordance with manufacturer's instructions are in place and available.
5. Required storage facilities have been provided.

1.04 DELIVERY

A. Scheduling and Timing of Deliveries:

1. Arrange deliveries of materials and equipment in accordance with the accepted Progress Schedule and in ample time to facilitate inspection prior to installation.
2. Schedule deliveries to minimize space required for and duration of storage of materials and equipment at the site or delivery location, as applicable.
3. Coordinate deliveries to avoid conflicting with the Work and conditions at the site, and to accommodate the following:
 - a. Work of other contractors and NYSEG.
 - b. Storage space limitations.
 - c. Availability of equipment and personnel for handling materials and equipment.
 - d. NYSEG's use of premises.
4. Deliver materials and equipment to the site during regular working hours.
5. Deliver materials and equipment to avoid delaying the Work and the Project, including work of other contractors, as applicable. Deliver anchor system materials, including anchor bolts to be embedded in concrete or masonry, in ample time to avoid delaying the Work.

B. Deliveries:

1. Shipments shall be delivered with Remediation Contractor's name, Subcontractor's name (if applicable), site name, Project name, and contract designation clearly marked.
2. Site may be listed as the "ship to" or "delivery" address; but NYSEG shall not be listed as recipient of shipment unless otherwise directed in writing by Remediation Engineer.
3. Provide Remediation Contractor's telephone number to shipper; do not provide NYSEG's telephone number.
4. Arrange for deliveries while Remediation Contractor's personnel are at the site. Remediation Contractor shall receive and coordinate shipments upon delivery. Shipments delivered to the site when Remediation Contractor is not present will be refused by NYSEG, and Remediation Contractor shall be responsible for the associated delays and additional costs, if incurred.
5. Comply with Section 01 35 43.13 - Environmental Procedures for Hazardous Materials.

C. Containers and Marking:

1. Have materials and equipment delivered in manufacturer's original, unopened, labeled containers.
2. Clearly mark partial deliveries of component parts of materials and equipment to identify materials and equipment, to allow easy accumulation of parts, and to facilitate assembly.

D. Inspection of Deliveries:

1. Immediately upon delivery, inspect shipment to verify that:
 - a. Materials and equipment comply with the Contract Documents and reviewed or accepted (as applicable) submittals.
 - b. Quantities are correct.
 - c. Materials and equipment are undamaged.

- d. Containers and packages are intact and labels are legible.
- e. Materials and equipment are properly protected.
- 2. Promptly remove damaged materials and equipment from the site and expedite delivery of new, undamaged materials and equipment, and remedy incomplete or lost materials and equipment to furnish materials and equipment in accordance with the Contract Documents, to avoid delaying progress of the Work.
- 3. Advise Remediation Engineer in writing when damaged, incomplete, or defective materials and equipment are delivered, and advise the Remediation Engineer of the associated impact on the Progress Schedule.

1.05 HANDLING OF MATERIALS AND EQUIPMENT

- A. Provide equipment and personnel necessary to handle materials and equipment, including those furnished by NYSEG, by methods that prevent soiling or damaging materials, equipment, and packaging.
- B. Provide additional protection during handling as necessary to prevent scraping, marring, and otherwise damaging materials, equipment, and surrounding surfaces.
- C. Handle materials and equipment by methods that prevent bending and overstressing.
- D. Lift heavy components only at designated lifting points.
- E. Handle materials and equipment in safe manner and as recommended by the manufacturer to prevent damage. Do not drop, roll, or skid materials and equipment off delivery vehicles or at other times during handling. Hand-carry or use suitable handling equipment.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 66 00

PRODUCT STORAGE AND HANDLING REQUIREMENTS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. This Section includes general requirements for storing and protecting materials and equipment.

1.02 STORAGE

- A. Store and protect materials and equipment in accordance with manufacturer's recommendations and the Contract Documents.
- B. Remediation Contractor shall make all arrangements and provisions necessary for, and pay all costs for, storing materials and equipment. Excavated materials, construction equipment, and materials and equipment to be incorporated into the Work shall be placed to avoid injuring the Work and existing facilities and property, and so that free access is maintained at all times to all parts of the Work and to public utility installations in vicinity of the Work. Store materials and equipment neatly and compactly in locations that cause minimum inconvenience to NYSEG, other contractors, public travel, and owners, tenants, and occupants of adjoining properties. Arrange storage in manner to allow easy access for inspection.
- C. Areas available at the site for storing materials and equipment are shown or indicated in the Contract Documents, or as approved by NYSEG or Remediation Engineer.
- D. Store materials and equipment to become NYSEG's property to facilitate their inspection and ensure preservation of quality and fitness of the Work, including proper protection against damage by freezing, moisture, and high temperatures with ambient temperatures as high as 90 degrees F. Store in indoor, climate-controlled storage areas all materials and equipment subject to damage by moisture, humidity, heat, cold, and other elements, unless otherwise acceptable to NYSEG. When placing orders to Suppliers for equipment and controls containing computer chips, electronics, and solid-state devices, Remediation Contractor shall obtain, coordinate, and comply with specific temperature and humidity limitations on materials and equipment, because temperature inside cabinets and components stored in warm temperatures can approach 200 degrees F.
- E. Remediation Contractor shall be fully responsible for loss or damage (including theft) to stored materials and equipment.
- F. Do not open manufacturer's containers until time of installation, unless recommended by the manufacturer or otherwise specified in the Contract Documents.
- G. Do not store materials or equipment in structures being constructed unless approved by Remediation Engineer in writing.
- H. Do not use lawns or other private property for storage without written permission of the owner or other person in possession or control of such premises.

1.03 PROTECTION

- A. Equipment to be incorporated into the Work shall be boxed, crated, or otherwise completely enclosed and protected during shipping, handling, and storage, in accordance with Section 01 65 00 - Product Delivery Requirements.
- B. Store all materials and equipment off the ground (or floor) on raised supports such as skids or pallets.
- C. Protect painted surfaces against impact, abrasion, discoloration, and other damage. Painted equipment surfaces that are damaged or marred shall be repainted in their entirety in accordance with equipment manufacturer and paint manufacturer requirements, to the satisfaction of Remediation Engineer.
- D. Protect electrical equipment, controls, and instrumentation against moisture, water damage, heat, cold, and dust. Space heaters provided in equipment shall be connected and operating at all times until equipment is placed in operation and permanently connected.

1.04 UNCOVERED STORAGE

- A. The following types of materials may be stored outdoors without cover on supports so there is no contact with the ground:
 - 1. Reinforcing steel.
 - 2. Pre-cast concrete materials.
 - 3. Structural steel.
 - 4. Metal stairs.
 - 5. Handrails and railings.
 - 6. Grating.
 - 7. Checker plate.
 - 8. Metal access hatches.
 - 9. Castings.
 - 10. Fiberglass products.
 - 11. Rigid electrical conduit.
 - 12. Piping, except polyvinyl chloride (PVC) or chlorinated PVC (CPVC) pipe.

1.05 COVERED STORAGE

- A. The following materials and equipment may be stored outdoors on supports and completely covered with covering impervious to water:
 - 1. Grout and mortar materials.
 - 2. Masonry units.
 - 3. Rough lumber.
 - 4. Soil materials and granular materials such as aggregate.
 - 5. PVC and CPVC pipe.
 - 6. Filter media.
- B. Tie down covers with rope or anchor with sandbags, and slope covering to prevent accumulation of water.
- C. Store loose soil materials and granular materials, with covering impervious to water, in well-drained area or on solid surfaces to prevent mixing with foreign matter. Place, grade, and shape stockpiles for proper drainage.

1.06 FULLY-PROTECTED STORAGE

- A. Store all material and equipment not named in Articles 1.04 and 1.05 of this Section on supports in buildings or trailers that have concrete or wooden flooring, roof, and fully-closed walls on all sides. Covering with visquine plastic sheeting or similar material in space without floor, roof, and walls is not acceptable. Comply with the following:
 - 1. Provide heated storage for materials and equipment that could be damaged by low temperatures or freezing.
 - 2. Provide air-conditioned storage for materials and equipment that could be damaged by high temperatures.
 - 3. Protect mechanical and electrical equipment from being contaminated by dust, dirt, and moisture.
 - 4. Maintain humidity at levels recommended by manufacturers for electrical and electronic equipment.

1.07 HAZARDOUS PRODUCTS

- A. Prevent contamination of personnel, storage area, and the site. Comply with Laws and Regulations, manufacturer's instructions, and Section 01 35 43.13 - Environmental Procedures for Hazardous Materials.

1.08 MAINTENANCE OF STORAGE

- A. On a scheduled basis, periodically inspect stored materials and equipment to ensure that:
 - 1. Condition and status of storage facilities is adequate to provide required storage conditions.
 - 2. Required environmental conditions are maintained on a continuing basis.
 - 3. Materials and equipment exposed to elements are not adversely affected.

1.09 RECORDS

- A. Keep up-to-date account of materials and equipment in storage to facilitate preparation of Applications for Payment, if the Contract Documents provide for payment for materials and equipment not incorporated in the Work but delivered and suitably stored at the site or at another location agreed to in writing.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

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SECTION 01 71 23
FIELD ENGINEERING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Providing field engineering services and professional services of the types indicated for the Project, including:
 - a. Furnishing civil, structural, and other professional engineering services specified or required to execute Remediation Contractor's construction methods.
 - b. Developing and making all detail surveys and measurements required for construction, including slope stakes, batter boards, and all other working lines, elevations, and cut sheets.
 - c. Providing materials required for benchmarks, control points, batter boards, grade stakes, and other items.
 - d. Keeping a transit, theodolite, or total station (theodolite with electronic distance measurement device), leveling instrument, and related implements such as survey rods and other measurement devices, at the site at all times, and having a skilled instrument person available when necessary for laying out the Work.
 - e. Being solely responsible for all locations, dimensions, and levels. No data other than Change Order, Work Change Directive, or Field Order shall justify departure from dimensions and levels required by the Contract Documents.
 - f. Rectifying all Work improperly installed because of not maintaining, not protecting, or removing without authorization established reference points, stakes, marks, and monuments.
 - g. Providing such facilities and assistance necessary for the Remediation Engineer to check lines and grade points placed by Remediation Contractor. Do not perform excavation or backfilling Work until all cross-sectioning necessary for determining payment quantities for Unit Price Work have been completed and accepted by Remediation Engineer.

1.02 QUALITY ASSURANCE

A. Qualifications:

1. Remediation Contractor Field Engineer:
 - a. Employ and retain at the site a field engineer with experience and capability of performing all field engineering tasks required of Remediation Contractor.
 - b. Responsibilities include, but are not necessarily limited to, the following:
 - 1) Checking all formwork, reinforcing, inserts, structural steel, bolts, sleeves, piping, other materials, and equipment for compliance with the Contract Documents.
 - 2) Maintaining field office files, drawings, and record documents, and coordinating field engineering services with Subcontractors and Suppliers as appropriate. Preparing layout and coordination drawings for construction operations.
 - 3) Checking and coordinating the Work for conflicts and interferences, and immediately advising the Remediation Engineer of all discrepancies of which Remediation Contractor is aware.
 - 4) Cooperating as required with the Remediation Engineer in observing the Work and performing field inspections.
 - 5) Reviewing and coordinating the Work with Shop Drawings and Remediation Contractor's other submittals.

2. Surveyor:
 - a. Employ or retain the services, as needed, at the site a surveyor with experience and capability of performing surveying and layout tasks required in the Contract Documents and as required for the Work. Surveyor shall be a professional land surveyor licensed and registered in the State of New York.
 - b. Responsibilities include, but are not necessarily limited to, the following:
 - 1) Providing required surveying equipment, including transit or theodolite, level, stakes, and surveying accessories.
 - 2) Establishing required lines and grades for performing all excavating, filling, compacting, and grading, and for constructing all facilities, structures, pipelines, and site improvements.
 - 3) Preparing and maintaining professional-quality, accurate, well organized, legible notes of all measurements and calculations made while surveying and laying out the Work.
 - 4) Performing such surveys and computations necessary to determine quantities of Work performed, placed, or installed.
 - 5) Performing such surveys necessary to record actual construction, including demolition, excavation, soil cover construction, backfilling, and restoration operations.
 - 6) Prior to backfilling operations, surveying, locating, and recording on a copy of the Contract Documents accurate representation of buried Work and Underground Facilities encountered.
 - 7) Preparing certified survey drawings in accordance with Section 01 78 39 - Project Record Documents.
 - 8) Complying with requirements of the Contract Documents relative to surveying and related Work.

1.03 SUBMITTALS

- A. Informational Submittals:
 1. Procedure Submittals: Submit acceptable plan for conducting all survey Work not less than 10 days prior to starting survey Work.
 2. Survey Field Books:
 - a. Submit example of proposed survey field books to be maintained by Remediation Contractor's surveyor. Example shall have sufficient information and detail, including example calculations and notes, to demonstrate that field books will be organized and maintained in a professional manner, complying with the Contract Documents.
 - b. Submit original field books within two days after completing survey Work.
 3. Qualifications Statements:
 - a. Remediation Contractor Field Engineer: Submit name and address of field engineer. When requested by Remediation Engineer, submit qualifications.
 - b. Surveyor: Submit name and address of firm, and resumes of each professional land surveyor and crew chief conducting the survey Work. Submit at least 10 days prior to beginning survey Work. During the Project, submit resume for each new registered land surveyor and crew chief employed or retained by Remediation Contractor at least 10 days prior to starting on the survey Work.
 4. Certificates:
 - a. Field Engineering: When requested by the Remediation Engineer, submit documentation verifying accuracy of field engineering.
 - b. Surveying: When requested by Remediation Engineer, submit certificate signed by professional surveyor certifying that elevations and locations of the Work comply with the Contract Documents. Explain all deviations, if any.

1.04 RECORDS

- A. Maintain at the site a complete and accurate log of control and survey Work as it progresses.
 - 1. Survey data shall be in accordance with recognized professional surveying standards, Laws and Regulations, and prevailing standards of practice in the locality where the site is located. Original field notes, computations, and other surveying data shall be recorded by Remediation Contractor's surveyor in Remediation Contractor-furnished hard-bound field books, and shall be signed and sealed by Remediation Contractor's surveyor. Completeness and accuracy of survey Work, and completeness and accuracy of survey records, including field books, shall be responsibility of Remediation Contractor. Failure to organize and maintain survey records in an appropriate manner that allows reasonable and independent verification of calculations, and to allow identification of elevations, dimensions, and grades of the Work, shall be cause for rejecting the survey records, including field books.
 - 2. Illegible notes or data, and erasures on any page of field books, are unacceptable. Do not submit copied notes or data. Corrections by ruling or lining out errors will be unacceptable unless initialed by the surveyor. Violation of these requirements may require re-surveying the data questioned by Remediation Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 SURVEYING

- A. Verification of Conditions: Verify site conditions before starting Work. Promptly notify Remediation Engineer of any discrepancies with the potential to affect the Work.
- B. Reference Points:
 - 1. NYSEG's established reference points damaged or destroyed by Remediation Contractor will be re-established by NYSEG at Remediation Contractor's expense.
 - 2. From NYSEG-established reference points, establish lines, grades, and elevations necessary to control the Work. Obtain measurements required for executing the Work to tolerances specified in the Contract Documents.
 - 3. Establish, place, and replace as required, such additional stakes, markers, and other reference points necessary for control, intermediate checks, and guidance of construction operations.
- C. Coordinate System and Reference Datums: Comply with the following:
 - 1. Coordinate System: New York State Plane Coordinate System of 1983, Central Zone.
 - 2. Reference Datums:
 - a. Horizontal: North American Datum of 1983.
 - b. Vertical: North American Vertical Datum of 1988.
- D. Surveys to Determine Quantities for Payment:
 - 1. For each Application for Payment, perform such surveys and computations necessary to determine quantities of Work performed, placed, or installed. Perform surveys necessary for Remediation Engineer to determine final quantities of Work performed or in place.
 - 2. Notify Remediation Engineer at least 24 hours before performing survey services for determining quantities. Unless waived in writing by Remediation Engineer, perform quantity surveys in presence of Remediation Engineer.

- E. Surveys to Record Actual Construction: Perform such surveys necessary to record actual construction including, but not limited to, the following:
1. Horizontal and vertical limits of excavation.
 2. Horizontal and vertical location of existing Underground Facilities and surface structures demolished, realigned, or abandoned in-place.
 3. Horizontal and vertical limits of fill for each material classification.
 4. Subgrade and final grade topography.
 5. Horizontal and vertical location of buildings, foundations, and walls.
 6. Horizontal location of exposed piping and utilities, poles, exposed wires, posts, signs, markers, curbs, fencing, gates, guard rails, guard cables, and other facilities visible at or above ground surface.
 7. Horizontal limits of lawns, pavements, roads, walks, drives, and other surface improvements.
 8. Horizontal and vertical location of monitoring wells, including ground surface elevation, outer casing elevation, and inner casing elevation.
- F. Construction Surveying: Comply with the following:
1. Alignment Staking: Provide alignment stakes at 50-foot intervals on tangent, and at 25-foot intervals on curves.
 2. Slope Staking: Provide slope staking at 50-foot intervals on tangent, and at 25-foot intervals on curves. Re-stake at every 10-foot difference in elevation.
 3. Structures: Stake out structures, including elevations, and check prior to and during construction.
 4. Pipelines: Stake out pipelines including elevations, and check prior to and during construction.
 5. Road: Stake out roadway elevations at 50-foot intervals on tangent, and at 25-foot intervals on curves.
 6. Cross-Sections: Provide original, intermediate, and final staking as required for site work, and other locations as necessary for quantity surveys.
 7. Easement Staking: Provide easement staking at 50-foot intervals on tangent, and at 25-foot intervals on curves. Also provide wooden laths with flagging at 100-foot maximum intervals.
 8. Record Staking: Provide permanent stake at each blind flange and each utility cap is provided for future connections. Stakes for record staking shall be material acceptable to Remediation Engineer.
- G. Accuracy:
1. Establish Remediation Contractor's temporary survey reference points for Remediation Contractor's use to at least second-order accuracy (i.e., 1:10,000). Construction staking used as a guide for the Work shall be set at least third-order accuracy (i.e., 1:5000). Basis on which such orders are established shall provide the absolute margin for error specified below.
 2. Horizontal accuracy of easement staking shall be plus or minus 0.1 foot. Accuracy of other staking shall be plus or minus 0.04 foot horizontally and plus or minus 0.02 foot vertically.
 3. Survey calculations shall include an error analysis sufficient to demonstrate required accuracy.

END OF SECTION

SECTION 01 71 33

PROTECTION OF ADJACENT CONSTRUCTION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Taking all precautions, providing all programs, and taking all actions necessary to protect the Work and all public and private property and facilities from damage as specified in this Section.
2. Identifying the locations of above- and below-grade utilities prior to conducting soil removal activities, and relocating/protecting utilities throughout the remedial construction.
3. To prevent damage, injury, or loss, Remediation Contractor's actions shall include the following:
 - a. Storing materials, supplies, and equipment in an orderly, safe manner that does not unduly interfere with the progress of the Work or work of other contractors or utility companies.
 - b. Providing suitable storage facilities for materials and equipment subject to damage or degradation by exposure to weather, theft, breakage, or other cause.
 - c. Placing upon the Work or any part thereof only loads consistent with the safety and integrity of that portion of the Work and existing construction.
 - d. Frequently removing and disposing of refuse, rubbish, scrap materials, and debris caused by Remediation Contractor's operations so that, at all times, the site is safe, orderly, and workmanlike in appearance.
 - e. Providing temporary barricades and guard rails around openings, scaffolding, temporary stairs and ramps, excavations, elevated walkways, and other hazardous areas.
4. Do not, except after written consent from proper parties, enter or occupy privately-owned land with personnel, tools, materials, or equipment, except on lands and easements provided by NYSEG. Remediation Contractor shall not seek out such written consent unless specifically authorized by NYSEG to do so.
5. Preserving public and private property and facilities on and adjacent to the site. Direct or indirect damage done by, or because of, any act, omission, neglect, or misconduct by Remediation Contractor in executing the Work, shall be restored by Remediation Contractor, at its expense to condition equal to that existing before damage was done.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 BARRICADES AND WARNING SIGNALS

A. General:

1. Where the Work is performed on or adjacent to roadway, access road, right-of-way, or public place:
 - a. Provide barricades, fences, lights, warning signs, danger signals, watchmen, and take other precautionary measures for protecting persons, property, and the Work.
 - b. Paint barricades to be visible at night.

- c. From sunset to sunrise, furnish and maintain at least one light at each barricade.
- d. Erect sufficient barricades to keep vehicles from being driven on or into Work under construction.
- e. Furnish watchmen in sufficient numbers to protect the Work.
- 2. Provide temporary barricades to protect personnel and property for Work not in or adjacent to vehicular travel areas, including indoor work, in accordance with Laws and Regulations.
- 3. Remediation Contractor's responsibility for maintaining temporary barricades, signs, lights, and for providing watchmen shall continue until the Work is accepted in accordance with the Contract Documents.

3.02 TREE AND PLANT PROTECTION

A. General:

- 1. Protecting existing trees, shrubs, and plants on or adjacent to the site, shown or designated to remain in place, against unnecessary cutting, breaking, or skinning of trunk, branches, bark, and roots.
- 2. Do not store materials or equipment, or park construction equipment and vehicles, within the foliage drip line.
- 3. Providing temporary fencing or barricades to protect trees and plants in areas subject to traffic.
- 4. Cover exposed roots with burlap, which shall be kept continuously wet. Cover exposed roots with earth as soon as possible. Protect root systems from mechanical damage and damage by erosion, flooding, run-off, and noxious materials in solution.
- 5. If branches or trunks are damaged, prune branches immediately and protect cut or damaged areas with emulsified asphalt compounded specifically for horticultural use, in a manner acceptable to the Remediation Engineer.
- 6. When directed by the Remediation Engineer, remove and dispose of damaged trees and plants that die or suffer permanent injury, and replace at the Remediation Contractor's expense damaged trees or plants with specimens of equal or better quality.

B. Coordinate Work in this Article 3.02 with Section 31 11 00 – Clearing and Grubbing.

3.03 PROTECTION OF EXISTING STRUCTURES

A. Underground Facilities:

- 1. Underground Facilities known to NYSEG and Design Engineer are shown on the Design Drawings. Information shown for Underground/Subsurface Facilities is the best available to NYSEG and Design Engineer but is not guaranteed to be correct or complete.
- 2. Utility Mark-Out and Utility Clearance.
 - a. Clearly delineate areas of subsurface intrusive work at the site.
 - b. Provide required notification to local one-call notification system (Dig Safely New York) at least two working days, but not more than 10 working days, before planned start of intrusive work.
 - c. Perform and document a desktop review of available drawings, site plans, or other reference material.
 - d. Walk the site and review utility markings before proceeding with intrusive work. Document any visible evidence of utilities.
 - e. Contact potential utility or industrial companies identified in previous steps, located near worksite.
 - f. Protect and preserve staking, markings, or other designations until no longer required for proper and safe Work at or near Underground Facilities.

3. Explore ahead of intrusive work, and uncover obstructing Underground Facilities sufficiently to determine their location, to prevent damage to Underground Facilities, and to prevent service interruption to building or parcels served by Underground Facilities. If the Remediation Contractor damages an Underground Facility, or the material surrounding or supporting the same, the Remediation Contractor shall immediately notify NYSEG, Remediation Engineer, and the owner of the damaged facility and restore it to original condition, in accordance with requirements of the owner of the damaged facility. Such repair or restoration Work shall be performed at no additional cost to NYSEG.
 - a. Undertake such emergency response actions as may be required.
 - b. Collect, containerize, characterize, and properly dispose of any oils or pollutants released from the damaged facility.
 - c. Provide provisions for alternate or temporary service until damaged facility is repaired.
 - d. Assist the owner of the damaged facility during repairs unless authorized by the facility's owner to undertake such repairs directly.
 4. Necessary changes in the location of the Work may be directed by the Remediation Engineer to avoid Underground Facilities not shown or indicated on the Contract Documents.
 5. If permanent relocation of an existing Underground Facilities is required and is not otherwise shown or indicated in the Contract Documents, the Remediation Contractor will be directed in writing to perform the Work. When the relocation Work results in a change in the Contract Price, Contract Times, contract modification procedures and payment for such Work shall be in accordance with the Contract Documents.
- B. Surface Structures:
1. Surface structures are existing buildings, retaining walls, other structures, and other facilities at or above ground surface, including their foundations or any extension below ground surface. Surface structures include, but are not limited to, buildings, tanks, walls, bridges, piers, roads, dams, spillways, channels, open drainage, exposed piping and utilities, poles, exposed wires, posts, signs, markers, curbs, walks, fencing, and other facilities visible at or above ground surface.
 2. Existing surface facilities, including but not limited to guard rails, posts, guard cables, signs, poles, markers, curbs, and fencing, that are damaged or temporarily removed to facilitate the Work shall be replaced and restored to their original condition at the Remediation Contractor's expense.
- C. Protection of Underground Facilities and Surface Structures:
1. Sustain and support in their places and protect from direct or indirect damage all Underground Facilities and surface structures located within or adjacent to the limits of the Work. Such sustaining and supporting shall be done carefully and as required by the party owning or controlling such facility or structure. Before proceeding with the Work of sustaining and supporting such facility or structure, the Remediation Contractor shall satisfy the Remediation Engineer that methods and procedures to be used have been approved by party owning same.
 2. Bear all risks related to the presence or proximity of all Underground Facilities and surface structures within or adjacent to Project Work Limits, in accordance with the Contract Documents. Remediation Contractor shall be responsible for damage and expense for direct or indirect injury caused by their Work to structures and facilities. Repair damage caused by their Work immediately, to the satisfaction of owner of damaged structure or facility.
 3. Notify NYSEG if utility-related objects are discovered during construction activities that were not previously identified.

4. In the event that the Remediation Contractor fails to observe and protect identified aboveground or underground facilities, and such facilities are damaged or destroyed by the Remediation Contractor's operations, the Remediation Contractor shall be responsible for any and all direct, indirect, or consequential costs incurred as a result of such failure. Furthermore, in such event, NYSEG may direct the Remediation Contractor to make immediate permanent or temporary repairs of damaged facilities, at the Remediation Contractor's sole expense, or NYSEG may elect to have the repairs performed by others, with the cost to be paid by and deducted from payment otherwise due to the Remediation Contractor.
5. Comply with 16 NYCRR 753 (Protection of Underground Facilities) and other Laws and Regulations regarding the protection of Underground Facilities.

D. Coordinate Work in this Article 3.03 with Section 31 05 16 - Aggregates for Earthwork.

3.04 PROTECTION OF EXISTING MONITORING WELLS

- A. Clearly mark, maintain, and protect existing monitoring wells shown or indicated to remain.
- B. Repair or decommission and replace at Remediation Contractor's expense existing monitoring wells damaged during the Work.
 1. Decommissioning shall be in accordance with the New York State Department of Environmental Conservation (NYSDEC) Groundwater Monitoring Well Decommissioning Policy (CP-43).
 2. Replace decommissioned monitoring well with new well of equal construction. Install at location selected by Remediation Engineer.

3.05 PROTECTION OF INSTALLED MATERIALS, EQUIPMENT, AND LANDSCAPING

- A. Protect installed materials and equipment to prevent damage from subsequent operations. Remove protection facilities when no longer needed prior to completion of the Work.
- B. Control traffic to prevent damage to equipment, materials, and surfaces.
- C. Provide coverings to protect materials and equipment from damage.

END OF SECTION

SECTION 01 74 13
PROGRESS CLEANING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
1. Remediation Contractor shall execute cleaning during the Project, at completion of the Work, and as required by this Section.
 2. Maintain in a clean manner the site, the Work, and areas adjacent to or affected by the Work.

1.02 REFERENCE STANDARDS

- A. The following standards are referenced in this Section:
1. National Fire Protection Association (NFPA) 241, Safeguarding Construction, Alteration, and Demolition Operations.

1.03 PROGRESS CLEANING

- A. General: Clean the site, work areas, and other areas occupied by Remediation Contractor at least weekly. Dispose of materials in accordance with the following:
1. Comply with NFPA 241 for removing combustible waste materials and debris.
 2. Do not hold non-combustible materials at the site more than three days if the temperature is expected to rise above 80 degrees F. When temperature is less than 80 degrees F, dispose of non-combustible materials within seven days of their generation.
 3. Provide suitable containers for storage of waste materials and debris.
 4. Containerize hazardous and unsanitary waste materials separately from other waste. Mark containers appropriately.
- B. Site:
1. Keep outdoor, dust-generating areas wetted down or otherwise control dust emissions in accordance with Section 01 57 00 - Temporary Controls.
 2. At least weekly, brush-sweep roadways and paved areas at the site that are used by construction vehicles or otherwise affected by construction activities.
- C. Work Areas:
1. Clean areas where the Work is in progress to level of cleanliness necessary for proper execution of the Work.
 2. Remove liquid spills promptly and immediately report spills to NYSEG and Remediation Engineer, and authorities having jurisdiction.
 3. Where dust would impair proper execution of the Work, broom-clean or vacuum entire work area, as appropriate.
 4. Concealed Spaces: Remove debris from concealed spaces before enclosing the space.
- D. Installed Work: Keep installed Work clean. Clean installed surfaces according to written instructions of manufacturer or fabricator of material or equipment installed, using only cleaning agents and methods specifically recommended by material or equipment manufacturer. If manufacturer does not recommend specific cleaning agents or methods, use cleaning agents and methods that are not hazardous to health and property and that will not damage exposed surfaces.

- E. Exposed Surfaces: Clean exposed surfaces and protect as necessary to ensure freedom from damage and deterioration until Substantial Completion.
- F. Waste Disposal:
 - 1. Properly dispose of waste materials, surplus materials, debris, and rubbish off the site.
 - 2. Do not burn or bury rubbish and waste materials at the site.
 - 3. Do not discharge volatile or hazardous substances, such as mineral spirits, oil, or paint thinner, into storm sewers or sanitary sewers.
 - 4. Do not discharge wastes into surface waters or drainage routes.
 - 5. Remediation Contractor shall be solely responsible for complying with Laws and Regulations regarding storing, transporting, and disposing of waste.
- G. During handling and installation of materials and equipment, clean and protect construction in progress and adjoining materials and equipment already in place. Apply protective covering where required for protection from damage or deterioration, until Substantial Completion.
- H. Clean completed construction as frequently as necessary throughout the construction period.

1.04 CLOSEOUT CLEANING

- A. Complete the following prior to requesting inspection for Substantial Completion:
 - 1. Clean and remove from the site rubbish, waste material, debris, and other foreign substances.
 - 2. Sweep paved areas broom-clean. Remove petrochemical spills, stains, and other foreign deposits.
 - 3. Hose-clean sidewalks and loading areas.
 - 4. Rake grounds that are neither planted nor paved to a smooth, even-textured surface.
 - 5. Leave surface waterways, drainage routes, storm sewers, and gutters open and clean.
 - 6. Repair pavement, roads, sod, and other areas affected by construction operations and restore to specified condition. If condition is not specified, restore to pre-construction condition.
 - 7. Clean exposed exterior and interior hard-surfaced finishes to dirt-free condition, free of spatter, grease, stains, fingerprints, films, and similar foreign substances.
 - 8. Remove debris and surface dust from limited-access spaces, including roofs, plenums, shafts, trenches, equipment vaults, manholes, and similar spaces.
 - 9. Remove non-permanent tags and labels.
 - 10. Leave the site clean, and in neat, orderly condition, satisfactory to NYSEG and Remediation Engineer.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 01 74 19

CONSTRUCTION WASTE MANAGEMENT AND DISPOSAL

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. This Section includes administrative and procedural requirements for:
 - a. Recycling non-hazardous, uncontaminated construction waste.
 - b. Disposing of non-hazardous, uncontaminated construction waste.
- B. Coordination:
 - 1. The Remediation Contractor shall coordinate the transportation and offsite treatment/disposal of materials (e.g., soil, water, debris) generated during construction activities.
- C. Related Sections:
 - 1. Section 01 31 13 - Project Coordination
 - 2. Section 02 61 13 - Excavation and Handling of Contaminated Material
 - 3. Section 31 05 16 - Aggregates for Earthwork
 - 4. Section 31 11 00 - Clearing and Grubbing
- D. Performance Requirements:
 - 1. Practice efficient waste management in using materials in the Work.
 - 2. Employ reasonable means to divert construction waste from landfills and incinerators. Facilitate recycling of materials, including the following:
 - a. Construction Waste:
 - 1) Site-clearing waste.
 - 2) Packaging:
 - a) Paper.
 - b) Cardboard and boxes.
 - c) Pallets and wood crates.
 - 3. Dispose of construction waste only at NYSEG-approved facilities.

1.02 TERMINOLOGY

- A. The following words or terms are not defined but, when used in this Section, have the following meaning:
 - 1. "Construction waste" is building and site improvement materials and other solid waste resulting from construction, remodeling, renovation, or repair operations. Construction waste includes packaging.
 - 2. "Disposal" is removal to an offsite location of construction waste and subsequent sale, recycling, reuse, or placement in an NYSEG-approved landfill or incinerator facility conforming to Laws and Regulations and acceptable to authorities having jurisdiction.
 - 3. "Recycle" is recovery of construction waste for subsequent processing in preparation for reuse.
 - 4. "Recycle and reuse" is recovery of construction waste and subsequent processing and reuse in the Work.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Comply with hauling and disposal Laws and Regulations of authorities having jurisdiction.

1.04 SUBMITTALS

A. Informational Submittals:

1. Waste Management Plan: Submit acceptable plan for managing construction waste within 14 days of the date the Contract Times commence running, and before removing any waste from the site. Include the following:
 - a. For materials that will be recycled and reused in the Work, procedures and equipment for preparing recycled materials before incorporating them into the Work.
 - b. Procedures for separating each type of recyclable waste, including sizes of containers, container labeling, and designated location at the site where materials will be separated and stored.
 - c. List of local, NYSEG-approved disposal facilities that will be used for construction waste. Include name, address, and telephone number of each recycling or processing facility, landfill, and incinerator facility. Identify type of waste to be disposed of at each facility.
2. Waste Profiles:
 - a. Preliminary Waste Profiles: The Remediation Contractor is responsible for obtaining a waste profile from the proposed disposal facility. The Remediation Engineer shall prepare and submit waste profile, listing NYSEG's name and address of the site as generator of waste, for each landfill and incinerator facility. NYSEG will sign and return each acceptable waste profile to Remediation Contractor.
 - b. Final Waste Profiles: Submit counter-signed waste profile and proof of acceptance of waste for each landfill and incinerator facility.
3. Disposal Records:
 - a. Recycling and Processing Facility Records: Submit counter-signed manifests, weight tickets, receipts, and invoices on a monthly basis throughout the Project, and concurrent with each Application for Payment.
 - b. Landfill and Incinerator Facility Records: Submit counter-manifests, weight tickets, receipts, and invoices on a monthly basis throughout the Project, and concurrent with each Application for Payment.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Recyclable Waste: On a daily basis, remove all recyclable materials from the work area in acceptable containers.
- B. Provide separate collection containers as required by recycling haulers and to prevent contamination of materials, including protection from the elements as applicable.
- C. Replace loaded containers with empty containers as demand requires, at least weekly.
- D. Handling: Deposit recyclable materials in containers in clean (no mud, adhesives, solvents, or petroleum or coal tar contamination), debris-free condition.
- E. If contamination chemically combines with materials so that materials cannot be cleaned, do not deposit into recycle containers.

- F. Environmental Requirements: Transport recyclable waste materials from the work area to recycling containers, and carefully deposit in containers in manner to minimize noise and dust. Close the covers of container immediately after materials are deposited. Do not place recyclable waste materials on the ground adjacent to container.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 WASTE MANAGEMENT

- A. Provide handling, containers, storage, signage, transportation, and other items required to manage wastes during the Project.
- B. Site Access and Temporary Controls:
1. Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent facilities.
 - a. Designate and label specific areas of the site necessary for separating materials to be recycled or reused.
 - b. Provide temporary controls in accordance with the Contract Documents.
- C. Shipping Documents: The Remediation Engineer shall prepare a non-hazardous waste manifest for each shipment of construction waste. NYSEG or an authorized agent will review and sign each manifest as generator of waste.

3.02 RECYCLING WASTE

- A. General:
1. Recycle paper and beverage containers used by Remediation Contractor's personnel, Subcontractors, and Suppliers.
 2. Separate recyclable waste from other waste materials, trash, and debris. Separate recyclable waste by type at the site to the maximum extent practical.
 - a. Provide appropriately marked containers or bins for controlling recyclable waste until recyclable materials are removed from the site. Post list of acceptable and unacceptable materials at each container and bin. Inspect containers and bins for contamination and remove contaminated materials if found.
 - b. Before removing from the site, prepare and process recyclable waste as required by recycling or processing facility.
 - c. Stockpile processed materials at the site without intermixing with other materials. Place, grade, and shape stockpiles to drain water. Cover to prevent dust and blowing debris.
 - d. Stockpile materials away from the construction area. Do not store within drip line of trees.
 - e. Remove recyclable waste from the site and from NYSEG's property and transport to NYSEG-approved recycling or processing facility.
- B. Recycling Construction Waste:
1. Site-Clearing Wastes:
 - a. Cut trees, branches, shrubs, brush, and logs into manageable lengths.
 - b. If required by recycling or processing facility, chip trees, branches, shrubs, brush, and logs before removing from the site.

2. Packaging:
 - a. Cardboard and Boxes: Break down packaging into flat sheets. Bundle and store at dry location.
 - b. Pallets: Require that goods delivered on pallets have the pallets removed from site, to the extent possible. For pallets that remain at the site, break down pallets into component wood pieces. Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, and treated wood materials.
 - c. Crates: Break down crates into component wood pieces. Sort and stack members according to size, type, and length. Separate lumber, engineered wood products, and treated wood materials.

3.03 DISPOSAL OF WASTE

- A. General: Except for items or materials to be recycled or recycled and reused, remove from the site and properly dispose of waste at NYSEG-approved facility such as permitted landfill or thermal treatment facility, or other method acceptable to NYSEG and authorities having jurisdiction.
 1. Except as otherwise specified, remove from the site all waste and debris from the Work as it accumulates. Upon completion of the Work, remove materials, equipment, waste, and debris and leave the site clean, neat, and orderly. Comply with the Contract Documents regarding cleaning and removal of trash, debris, and waste.
 2. Remove and transport debris in a manner that will prevent spillage on adjacent surfaces and areas.
- B. Burning: Do not burn waste materials at the site.

END OF SECTION

SECTION 01 77 19
CLOSEOUT PROCEDURES

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. Provisions of this section apply to the procedural requirements for closeout of Work executed by the Remediation Contractor.
- B. Related Sections:
 - 1. Section 01 11 00 - Summary of Work
 - 2. Section 01 29 76 - Progress Payment Procedures
 - 3. Section 01 78 39 - Project Record Documents

1.02 SUBMITTALS

- A. The Remediation Contractor shall provide all documentation pertaining to all components of Work executed by the Remediation Contractor and requiring inspection prior to submitting an application for Final Certification Inspection including, but not limited to, tables showing actual excavated and backfilled volumes, Construction Drawings, certified survey data, executed warranties, bills of lading and/or waste manifests from the waste hauler, certified weigh slips from the disposal facility, maintenance agreements, inspection certificates and similar required documentation for specific units of Work.
- B. Truck volume counts and measurement summary. Following completion of construction and as a pre-requisite for Final Inspection and Closeout Meeting, the Remediation Contractor shall provide the Remediation Engineer with final truck volume counts and measurement summary tables. Provide supporting data that was used to develop the measurement summary tables.
- C. The Remediation Contractor shall prepare and submit Closeout Documents in accordance with Section 01 78 39 - Project Record Documents.

1.03 INSPECTION PROCEDURES

- A. Substantial Completion:
 - 1. Preliminary Procedures: Prior to requesting an inspection for Substantial Completion, the Remediation Contractor shall complete the following:
 - a. Prepare a list of items (i.e., punch-list) to be completed and corrected, including the value of the items on the list, and the reasons why the items are not completed. Submit the list to the Remediation Engineer.
 - b. Advise the Remediation Engineer, in writing, of pending insurance changeover requirements, if applicable.
 - c. Terminate and remove temporary facilities, including mockups, construction tools, and similar elements from the site, as necessary.
 - d. Complete grading, restoration, and final cleaning.

2. Inspection: Submit a written request for inspection for Substantial Completion. On receipt of the request, the Remediation Engineer will proceed with the inspection or notify the Remediation Contractor of unfulfilled requirements. The Remediation Engineer will prepare the Certificate of Substantial Completion after inspection or will notify the Remediation Contractor of items, either on Remediation Contractor's list or additional items identified by the Remediation Engineer, that must be completed or corrected before the Certificate of Substantial Completion will be issued. Any outstanding items required for Substantial Completion at this time will be documented as the formal punch-list for Substantial Completion:
 - a. Re-inspection: Request re-inspection when the punch-list is completed or corrected.
 - b. Results of completed inspection will form the basis of requirements for Final Completion.
- B. Final Acceptance:
1. Preliminary Procedures: Before requesting final inspection for determining date of Final Completion, complete the following:
 - a. Submit a Request for Payment in accordance with the procedures specified in Section 01 29 76 - Progress Payment Procedures.
 - b. Submit a Certification for the Remediation Engineer stating that all items, actions, and requirements of the punch-list have been completed, corrected, satisfied, or otherwise resolved.
 2. Inspection: Submit a written request for final inspection for acceptance. The Remediation Engineer will prepare a Recommendation of Final Payment after inspection or will notify the Remediation Contractor of work that must be completed or corrected before the Certificate will be issued.

PART 2– PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 FINAL CLEANING

- A. At the time of project closeout, clean and restore the Work area to its pre-construction condition. Complete the following operations before requesting the Remediation Engineer's inspection for certification of substantial completion:
1. Remove non-permanent protection and labels.
 2. Remove debris.
 3. Inspect Project Work Limits.

END OF SECTION

SECTION 01 78 39

PROJECT RECORD DOCUMENTS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. Remediation Contractor shall maintain and submit to Remediation Engineer record documents in accordance with this Section.

1.02 SUBMITTALS

- A. Closeout Submittals:
 - 1. Record Documents: Submit in accordance with Article 1.04 of this Section.

1.03 MAINTENANCE OF RECORD DOCUMENTS

- A. Maintain in Remediation Contractor's field office, in clean, dry, legible condition, complete sets of the following record documents:
 - 1. Drawings, Specifications, and Addenda.
 - 2. Shop Drawings, Samples, and other Remediation Contractor submittals, including records of test results, reviewed or accepted, as applicable, by Remediation Engineer.
 - 3. Change Orders, Work Change Directives, Field Orders, photographic documentation, survey data, permits, and all other documents pertinent to the Work.
- B. Provide files and racks for proper storage and easy access to record documents. File record documents in accordance with the edition of the Construction Specification Institute's (CSI) "MasterFormat" used for organizing the Project Manual, unless otherwise accepted by Remediation Engineer.
- C. Make record documents available for inspection upon request of NYSEG or Remediation Engineer.
- D. Do not use record documents for purpose other than serving as Project record. Do not remove record documents from Remediation Contractor's field office without Remediation Engineer's approval.

1.04 SUBMITTAL OF RECORD DOCUMENTS

- A. Prior to readiness for final payment, submit to Remediation Engineer one copy of the following record documents:
 - 1. Drawings.
 - 2. Specifications and Addenda.
- B. Submit record documents with transmittal letter on Remediation Contractor letterhead complying with letter of transmittal requirements in Section 01 33 00 – Submittal Procedures.
- C. Record documents submittal shall include certification, with original signature of an official authorized to execute legal agreements on behalf of Remediation Contractor, reading as follows:

"[Insert Remediation Contractor's corporate name] has maintained and submitted record documentation in accordance with Specification Section 01 78 39 – Project Record Documents and other elements of Contract Documents, for the NYSEG, Clyde Former MGP Site, Village of Clyde, Wayne County, New York. We certify that each record document submitted is complete, accurate, and legible relative to the Work performed under our Contract, and that the record documents comply with the requirements of the Contract Documents.

[Provide signature, print name, print signing party's corporate title, and date]"

1.05 RECORDING CHANGES

A. General:

1. At the start of the Project, label each record document to be submitted as "PROJECT RECORD" using legible, printed letters. Letters on record copy of the Drawings shall be two inches high.
2. Keep record documents current. Make entries on record documents within two working days of receipt of information required to record the change.
3. Do not permanently conceal the Work until required information has been recorded.
4. Accuracy of record documents shall be such that future searches for items shown on the record documents may rely reasonably on information obtained from Remediation Engineer-accepted record documents.
5. Marking of Entries:
 - a. Use erasable, colored pencils (not ink or indelible pencil) for marking changes, revisions, additions, and deletions to record documents.
 - b. Clearly describe the change by graphic line and make notations as required. Use straight-edge to mark straight lines. Writing shall be legible and sufficiently dark to allow scanning of record documents into legible electronic files.
 - c. Date all entries on record documents.
 - d. Call attention to changes by drawing a "cloud" around the change(s) indicated.
 - e. Mark initial revisions in red. In the event of overlapping changes, use different colors for subsequent changes.

B. Drawings:

1. Record changes on a copy of the Drawings. Submittal of Remediation Contractor-originated or -produced drawings as a substitute for recording changes on the Drawings is unacceptable.
2. Record changes on plans, sections, schematics, and details as required for clarity, making reference dimensions and elevations (to Project datum) for complete record documentation.
3. Record actual construction, including:
 - a. Horizontal and vertical location of existing Underground Facilities and surface structures demolished, realigned, or abandoned in-place, referenced to permanent surface improvements. For each Underground Facility or surface structure, provide dimensions to at least two permanent, visible surface improvements.
 - b. Horizontal and vertical limits of excavation bracing.
 - c. Horizontal and vertical limits of excavation.
 - d. Horizontal and vertical limits of the soil cover.
 - e. Depths of various elements of foundation relative to Project datum.
 - f. Horizontal and vertical location of new Underground Facilities referenced to permanent surface improvements. For each Underground Facility, including pipe fittings, provide dimensions to at least two permanent, visible surface improvements.
 - g. Location of exposed utilities and appurtenances concealed in construction, referenced to visible and accessible features of structure.

- h. Changes in structural and architectural elements of the Work, including changes in reinforcing.
 - i. Field changes of dimensions, arrangements, and details.
 - j. Changes made in accordance with Change Orders, Work Change Directives, and Field Orders.
 - k. Changes in details on the Design Drawings. Submit additional details prepared by Remediation Contractor when required to document changes.
4. Supplemental Drawings:
- a. In some cases, drawings produced during construction by Remediation Engineer or Remediation Contractor supplement the Drawings and shall be included with record documents submitted by Remediation Contractor. Supplemental record drawings shall include the following:
 - 1) Drawings provided with Change Orders, Work Change Directives, and Field Orders.
 - 2) Drawings that cannot be incorporated into the Drawings due to space limitations.
 - 3) Certified survey drawings, in accordance with Article 1.06 of this Section.
 - b. Supplemental drawings provided with record drawings shall be integrated with the Drawings and include necessary cross-references between drawings. Supplemental record drawings shall be on sheets the same size as the Drawings.
 - c. When supplemental drawings developed by Remediation Contractor using computer-aided drafting/design (CADD) software are to be included in record drawings, submit electronic files for such drawings in AutoCAD 2009 format as part of record drawing submittal. Submit electronic files on compact disc labeled, "Supplemental Record Drawings", together with Remediation Contractor name, Project name, and Contract name and number.
- C. Specifications and Addenda:
- 1. Mark each Section to record:
 - a. Manufacturer, trade name, catalog number, and Supplier of each product and item of equipment actually provided.
 - b. Changes made by Addendum, Change Orders, Work Change Directives, and Field Orders.

1.06 CERTIFIED SURVEY DRAWINGS

- A. Prepare the following survey drawings:
- 1. Pre-Construction survey, depicting the pre-construction horizontal and vertical limits of soil removal, excavation bracing, and the soil cover area, including subgrade spot elevations and topographic contours.
 - 2. Post-Excavation survey, depicting the horizontal and vertical limits of soil removal, including subgrade spot elevations and topographic contours.
 - 3. Post-Construction survey, depicting the final horizontal and vertical limits of soil removal, and the soil cover area, excavation bracing, including subgrade spot elevations and topographic contours.
 - 4. Soil cover subgrade plan, depicting the horizontal limits of grading and subgrade topographic contours.
 - 5. Final site plan, depicting final (post-construction) site conditions.
- B. Drawing Requirements:
- 1. General Content:
 - a. Property lines, easements, and rights-of-way.
 - b. Topographic contours at minimum one-foot intervals.
 - c. Horizontal and vertical location of buildings, foundations, bridges, and walls.

- d. Horizontal location of exposed piping and utilities, poles, exposed wires, posts, signs, markers, curbs, fencing, gates, guard rails, guard cables, and other facilities visible at or above ground surface.
- e. Horizontal limits of lawns, pavements, roads, walks, drives, and other surface improvements.
- f. Horizontal and vertical location of monitoring wells, including ground surface elevation, outer casing elevation, and inner casing elevation.
- g. Horizontal location, size (diameter), and species of trees and other plantings.
2. Scale: One inch equals 20 feet.
3. Sheet Size: 34 inches wide by 22 inches high.

C. Certification:

1. Each survey drawing shall be signed and sealed by a professional land surveyor licensed and registered in the State of New York.

1.07 ELECTRONIC FILES FURNISHED BY REMEDIATION ENGINEER

- A. CADD files will be furnished by Remediation Engineer upon the following conditions:
1. Remediation Contractor shall submit to Remediation Engineer a letter on Remediation Contractor letterhead requesting CADD files and providing specific definition(s) or description(s) of how files will be used, and specific description of benefits to NYSEG if the request is granted.
 2. Remediation Contractor shall execute Remediation Engineer's standard agreement for release of electronic files and shall abide by all provisions of the agreement for release of electronic files.
 3. Layering system incorporated in CADD files shall be maintained as transmitted by Remediation Engineer. CADD files transmitted by Remediation Engineer containing cross-referenced files shall not be bound by Remediation Contractor. Drawing cross-references and paths shall be maintained. If Remediation Contractor alters layers or cross-reference files, Remediation Contractor shall restore all layers and cross-references prior to submitting record documents to Remediation Engineer.
 4. Remediation Contractor shall submit record drawings to Remediation Engineer in same CADD format that files were furnished to Remediation Contractor.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION (NOT USED)

END OF SECTION

SECTION 02 21 19

STRUCTURAL SURVEYS

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Remediation Contractor shall provide all labor, materials, equipment, professional services, and incidentals as specified and required to perform structural surveys.
2. The Work includes, but is not limited to, performing pre-construction and post-construction structural surveys of the following:
 - a. Electrical Substation
 - b. Can-It Bottle Return Center Building
 - c. Galen Historic Society Museum
 - d. Veterans of Foreign Wars (VFW) Post 947 Building
 - e. Clyde Lumber Yard Buildings

1.02 QUALITY ASSURANCE

A. Qualifications:

1. Professional Engineer:
 - a. Remediation Contractor shall retain the services of a professional engineer licensed and registered in the State of New York and experienced in providing engineering services of the kind indicated.
 - b. Responsibilities include, but are not necessarily limited to, performing structural surveys, and preparing and certifying structural survey reports.

1.03 SUBMITTALS

A. Informational Submittals:

1. Qualifications Statements: Submit name, address of firm, and qualifications of professional engineer.
2. Notification of Intended Survey Start: Submit in accordance with Paragraph 3.01A of this Section.
3. Survey Reports: Submit in accordance with Article 1.04 of this Section.

1.04 SURVEY REPORTS

- A. Remediation Contractor's professional engineer shall prepare separate reports for each property and survey. In each report, document the results of the survey and the conditions of visible surface structures located at the property. Include field notes, measurements, and photographs taken during the survey. Number each photograph and label with description and orientation.
- B. Submit reports within 14 days after each survey. Reports shall be certified by the professional engineer.

1.05 SCHEDULING AND SEQUENCING

- A. Pre-Construction Surveys: Perform pre-construction surveys before initiating removal activities. Deflection or vibration causing construction operations may not begin until the pre-construction reports for each of the identified structures are reviewed by NYSEG and Remediation Engineer.
- B. Post-Construction Surveys: Perform post-construction surveys after completion of all removal and backfilling operations and before Substantial Completion.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 PREPARATION

- A. Notification: Notify NYSEG and Remediation Engineer in writing not less than 14 days before performing each survey. Do not enter properties without permission of NYSEG.

3.02 STRUCTURAL SURVEYS

- A. Structural surveys shall be performed in accordance with this specification and Section 01 71 23 - Field Engineering and 31 09 13 - Geotechnical Instrumentation and Monitoring.
- B. The professional engineer shall review any available drawings to gain understanding of the structure framework and support system.
- C. Perform structural surveys to assess and document the pre-construction and post-construction structural and cosmetic conditions of visible surface structures located at each property. Surveys shall be performed by the Remediation Contractor's retained professional engineer. The Remediation Engineer will accompany Remediation Contractor's professional engineer for each survey.
- D. For each survey, take comprehensive notes, measurements, and photographs of each structure as a whole and of potential areas of damage or deterioration including, but not limited to, the following:
 - 1. Photographic documentation should provide an overview of the entire structure or property, in addition to close-up pictures to record problematic areas (e.g. cracks, corrosion, etc.). Each photograph will be labeled with a picture number, description, and orientation.
 - 2. Notes and measurements should be taken on potential items of concern, including, but not limited to, the following:
 - a. Spalling concrete.
 - b. Cracks.
 - c. Active leaking.
 - d. Construction joints. Note if joint is opening (cracking) or tight.
 - e. Cracking associated with transitions in geometry. Note changes in plan or section dimensions and any settlement or shrinkage cracking.
 - f. Foundation settlement.
 - g. Bearing seats of beam/column connections. Carefully examine for potential separation, spalling, and cracking that may be associated with thermodynamic changes or joint rotation.

- h. Bolts and connections.
 - i. Areas of corrosion in structural members associated with cracking.
 - j. Areas of delaminating concrete or voids in concrete in walls and slabs. Note method of observation (e.g., hammer sounding, chain drag, ultrasonic testing, etc.).
- E. Prepare separate survey report for each property in accordance with Article 1.04 of this Section.

END OF SECTION

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SECTION 02 41 00

DEMOLITION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Remediation Contractor shall provide all labor, materials, equipment, and incidentals as shown, specified, and required for demolition, removal, and disposal Work.
2. The Work under this Section includes, but is not necessarily limited to, the following:
 - a. Demolition and removal of existing materials and equipment as shown or indicated in the Contract Documents. The Work includes demolition of former manufactured gas plant foundations, walls, piping, former Underground Facilities, and similar existing facilities.
3. Demolitions and removals specified under other Sections shall comply with requirements of this Section.
4. Perform demolition Work within areas shown or indicated.
5. Pay all fees associated with transporting and disposing of materials and equipment resulting from demolition.

B. Coordination:

1. Review procedures under this and other Sections and coordinate Work that must be performed with or before demolitions and removals.

C. Related Sections:

1. Section 01 74 13 - Progress Cleaning
2. Section 01 74 19 - Construction Waste Management and Disposal
3. Section 02 61 13 – Excavation and Handling of Contaminated Material
4. Section 31 11 00 - Clearing and Grubbing
5. Section 31 23 00 - Excavation and Fill

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section.

1. National Fire Protection Association (NFPA) 51, Standard for Fire Prevention During Welding, Cutting, and Other Hot Work.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 29 Code of Federal Regulation (CFR) 1910.251 through 29 CFR 1910.255, Subpart Q – Welding, Cutting, and Brazing.
 - b. 29 CFR 1926.350 through 29 CFR 1926.354, Subpart J – Welding and Cutting.
 - c. 29 CFR 1926.850 through 29 CFR 1926.860, Subpart T – Demolition.
 - d. 12 New York Codes, Rules and Regulations (NYCRR) 23-1.25, Welding and Flame Cutting Operations.
 - e. 12 NYCRR 23-3.1 through 12 NYCRR 23-3.3, Subpart 23-3 – Demolition Operations.
 - f. 16 NYCRR 753, Protection of Underground Utilities.
2. Obtain required permits and approvals for demolition, removal, and disposal Work.

3. Comply with requirements of authorities having jurisdiction.

1.04 SUBMITTALS

A. Informational Submittals:

1. Demolition and Removal Plan: Submit acceptable plan for demolition and removal Work not less than 21 days prior to starting demolition Work. Include the following:
 - a. Plan for coordinating shut-offs, locating, capping, temporary services, and continuing utility services.
 - b. Other proposed procedures as applicable.
 - c. List of proposed equipment for demolition and removal Work.
 - d. Planned sequence of demolition operations, including coordination with excavation and pile driving Work.
 - e. Detailed schedule of demolition Work in accordance with the accepted Progress Schedule.
2. Qualifications Statements: Submit name and qualifications of entity performing electrical removals, including copy of licenses required by authorities having jurisdiction.
3. Notification of Intended Demolition Start: Submit in accordance with Paragraph 3.01.A of this Section.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 PREPARATION

A. Notification:

1. At least 48 hours prior to commencing demolition or removal Work, notify NYSEG, Construction Manager, and Remediation Engineer in writing of planned start of demolition Work. Do not start removals without permission of Remediation Engineer.

B. Protection of Surrounding Areas and Facilities:

1. Perform demolition and removal Work in manner that prevents damage and injury to property, structures, occupants, the public, and facilities. Do not interfere with use of, and free and safe access to and from, structures and properties.
2. Closing or obstructing of roads, drives, sidewalks, and passageways adjacent to the Work is not allowed unless indicated otherwise in the Contract Documents. Conduct the Work with minimum interference to vehicular and pedestrian traffic.
3. Provide temporary barriers, lighting, sidewalks, sheds, and other necessary protection.
4. Protect construction and facilities indicated to remain against damage and soiling during demolition Work. Repair damage at Remediation Contractor's expense.

C. Existing Utilities: Comply with the following:

1. Should uncharted or incorrectly charted Underground Facilities be encountered, Remediation Contractor shall cooperate with utility owners in keeping adjacent services and facilities in operation.
2. Other Utilities: Before proceeding with demolition, locate; identify; drain, purge, or de-energize; and disconnect, seal, or cap as required all other utilities serving the building or structure being demolished, such as electric, fuel and gas, communications, service laterals, and heating, ventilating, and air conditioning.
3. Shutdown of utility services shall be coordinated and paid for by Remediation Contractor and will be assisted by NYSEG as required relative to contacting utility owners.

3.02 DEMOLITION – GENERAL

- A. Locate construction equipment used for demolition Work and remove demolished materials and equipment to avoid imposing excessive loading on supporting and adjacent walls, floors, framing, facilities, and Underground Facilities.
- B. Pollution Controls:
 - 1. Use water sprinkling, temporary enclosures, and other suitable methods to limit emissions of dust and dirt to lowest practical level. Comply with Section 01 57 00 - Temporary Controls, and Laws and Regulations.
 - 2. Do not use water when water may create hazardous or objectionable conditions such as icing, flooding, or pollution.
 - 3. Clean adjacent structures, facilities, properties, and improvements of dust, dirt, and debris caused by demolition Work, in accordance with Section 01 74 13 - Progress Cleaning.
- C. Explosives: Use of explosives is prohibited.
- D. Hot Work: Comply with NFPA 51 and Laws and Regulations.
 - 1. Do not use cutting torches until work area is cleared of flammable materials. At concealed spaces, such as duct and pipe interiors, verify condition and contents of hidden space before starting flame-cutting operations. Maintain fire watch and portable fire-suppression devices during flame-cutting operations.
 - 2. Maintain adequate ventilation when using cutting torches.
- E. Building or Structure Demolition:
 - 1. Unless otherwise approved by Remediation Engineer, proceed with demolition from top down. Complete demolition Work above each floor or tier before disturbing supporting members of lower levels.
 - 2. Demolish concrete and masonry in small sections.
 - 3. Remove structural framing members and lower to ground using hoists, cranes, or other suitable methods. Do not throw or drop to the ground.
 - 4. Break up and remove foundations and slabs-on-grade unless otherwise shown or indicated as remaining in place.
 - 5. Break up and remove below-grade construction, including basements, foundation walls, slabs, and footings, to at least sixty inches below final elevations shown or indicated, unless otherwise directed by Remediation Engineer. Upon completing such removals, measure, survey, and record portions of below-grade construction, if any, that remain in place.
- F. Demolition of Site Improvements:
 - 1. Manholes, Vaults, Chambers, and Handholes: Remove to the limits shown or indicated.
 - 2. Underground Facilities Other than Manholes, Vaults, Chambers, and Handholes:
 - a. Before proceeding with demolition, locate; identify; drain, purge, or de-energize; and make safe for removal and capping all Underground Facilities being demolished. Collect, containerize, and properly dispose of chemicals, gases, coal tar, or other dangerous materials recovered from Underground Facilities.
 - b. Remove Underground Facilities to the extent shown or indicated. Where extent is not shown or indicated, extent of removal shall be 24 inches (horizontally) outside of excavations and six inches below subgrade elevations shown or indicated.
 - c. Unless otherwise shown or indicated, cap ends of piping to remain in accordance with Article 3.04 of this Section.
 - d. Upon completing removals, measure, survey, and record portions of Underground Facilities, if any, that remain.

3.03 STRUCTURAL REMOVALS

- A. Remove structures to lines and grades shown or indicated in the Contract Documents, unless otherwise directed by Remediation Engineer. Removals beyond limits shown or indicated shall be at Remediation Contractor's expense.
- B. Recycling and Reuse of Demolished Materials:
 - 1. All concrete and masonry materials, reinforcing steel, structural metals, miscellaneous metals, wire mesh, and other items contained in or upon the structures to be demolished shall be removed, transported, and disposed of away from the site, unless otherwise approved by Remediation Engineer. Comply with Sections 01 74 19 - Construction Waste Management and Disposal and 31 23 00 - Excavation and Fill.

3.04 MECHANICAL REMOVALS

- A. Mechanical demolition and removal Work includes dismantling and removing existing piping and appurtenances as shown, indicated, and required for completion of the Work. Mechanical removals include cutting and capping as required.
- B. Demolition and Removals of Piping and Similar Items:
 - 1. Before proceeding with demolition, drain or purge piping of chemicals or fuel and make safe for removal and capping.
 - 2. Remove to the extent shown or indicated existing process, water, waste and vent, chemical, gas, fuel, and other piping. Provide caps on ends of remaining piping. Where piping to be demolished passes through existing walls to remain, cut off and cap pipe on each side of the wall.
 - 3. Caps, Closures, Blind Flanges, and Plugs:
 - a. Provide closure pieces, such as blind flanges and caps, where shown or required to complete the Work.
 - b. Where used in this Section, the term "cap" means the appropriate type closure for the piping being closed, including caps, blind flanges, and other closures.
 - c. Caps shall be compatible with the piping to which the cap is attached, fluid-tight and gas-tight, and appropriate for the fluid or gas conveyed in the pipe.
 - d. Unless otherwise shown or indicated, caps shall be mechanically fastened, fused, or welded to pipe. Plug piping with means other than specified in this Section only when so shown or indicated in the Contract Documents or when allowed by Remediation Engineer.
 - 4. When Underground Facilities are altered or removed, properly cut and cap piping left in place, unless otherwise shown or indicated.

3.05 DISPOSAL OF DEMOLISHED MATERIALS

- A. Except for items or materials to be recycled and reused, remove from the site all debris, waste, rubbish, and material resulting from demolition operations and equipment used in demolition Work. Comply with Sections 01 74 13 - Progress Cleaning, 01 74 19 - Construction Waste Management and Disposal, and 02 61 13 - Excavation and Handling of Contaminated Material.
- B. Transportation and Disposal:
 - 1. Non-Hazardous Material: Properly transport and dispose of non-hazardous demolition debris at an appropriate, NYSEG-approved facility in accordance with Laws and Regulations. Non-hazardous material does not contain Asbestos, polychlorinated biphenyls (PCBs), Petroleum, Hazardous Waste, Radioactive Material, or other material designated as hazardous in Laws and Regulations.

2. Hazardous Material: When handling and disposal of hazardous materials is included in the Work, properly transport and dispose of hazardous materials in accordance with Laws and Regulations and the Contract Documents.

END OF SECTION

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DEMOLITION
02 41 00 – 6
REVISION NO. 00
DATE ISSUED: MAY 2019

NYSEG
REMEDIAL DESIGN
CLYDE FORMER MGP SITE
VILLAGE OF CLYDE, WAYNE COUNTY, NEW YORK

SECTION 02 51 00

DECONTAMINATION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope

1. The decontamination of all vehicles, equipment, and personnel that come into contact with excavated or impacted materials at the site.
2. The construction and maintenance of decontamination areas.
3. Furnishing all materials, equipment, and labor necessary to construct and maintain decontamination areas and decontaminate vehicles, equipment, and personnel.

B. Related Sections:

1. Section 02 61 13 – Excavation and Handling of Contaminated Material
2. Section 31 05 16 - Aggregates for Earthwork

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

- ###### A. Occupational Safety and Health Guidance Manual for Hazardous Waste Site Activities (October 1985), as prepared by the National Institute of Occupational Safety and Health (NIOSH), Occupational Safety and Health Administration (OSHA), United States Coast Guard (USCG), and United States Environmental Protection Agency (USEPA).

1.03 SUBMITTALS

- ###### A. Safety Data Sheets (SDS) for all cleaning/decontamination solutions shall be included in the Remediation Contractor's Health and Safety Plan (HASP). SDS forms must be provided for review by NYSEG and the Remediation Engineer prior to being brought on site.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 GENERAL REQUIREMENTS

- ###### A. All construction vehicles leaving the work area shall be decontaminated by the Remediation Contractor (as necessary) to prevent the tracking of soil offsite (including vehicles transporting clean fill to the site). Vehicles and equipment that come into contact with excavated or impacted materials at the site shall be visually inspected and decontaminated by the Remediation Contractor (to the satisfaction of NYSEG, Remediation Engineer, and/or New York State Department of Environmental Conservation [NYSDEC]) within the equipment decontamination area prior to handling backfill material or leaving the site. Any visible soils or other debris shall be promptly removed and disposed of in a manner consistent with the materials excavated.
- ###### B. Precautions shall be taken to limit contact between the vehicle/equipment, personnel performing the decontamination activities, and any decontamination liquids that may accumulate in the decontamination area. Personnel engaged in decontamination activities

shall use personal protective equipment, including disposable clothing, as required by the Remediation Contractor's HASP.

- C. Wash water, solids, and other materials generated during decontamination activities shall be collected by the Remediation Contractor and handled/managed in accordance with the WMP and Section 02 61 13 – Excavation and Handling of Contaminated Material. Accumulated liquids shall be removed by the Remediation Contractor on a periodic basis so as to not exceed the capacity of the decontamination area.

3.02 DECONTAMINATION AREAS

- A. The Remediation Contractor is responsible for constructing and maintaining decontamination area(s) to accommodate all loads, vehicles, equipment, and migration scenarios.
- B. The Remediation Contractor is responsible for constructing the decontamination area at the locations shown on the Design Drawings. Alternative locations within the Project Work Limits shall be approved by NYSEG and/or Remediation Engineer prior to construction.
- C. Vehicle/equipment decontamination areas shall be constructed as specified on the Design Drawings. Alternate decontamination area configuration/construction shall be approved by the Remediation Engineer prior to construction.
- D. The Remediation Contractor shall construct and maintain appropriately-sized decontamination areas for its personnel. Personnel decontamination areas shall be located within the contamination reduction zone and include those facilities necessary to decontaminate personnel upon exiting the work area (exclusion zone), in accordance with the Remediation Contractor's HASP, and in accordance with local, state, and federal laws and regulations. At a minimum, personnel decontamination areas shall include run-on/run-off controls.

END OF SECTION

SECTION 02 61 13

EXCAVATION AND HANDLING OF CONTAMINATED MATERIAL

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Providing all labor, materials, equipment, and incidentals as specified and required to remove from the site and dispose of contaminated material.
2. Handling, segregating, dewatering, temporarily storing as necessary, loading, transporting, and disposing of contaminated material at appropriate, NYSEG-selected or NYSEG-approved facilities in accordance with Laws and Regulations.
3. Paying all fees (unless otherwise paid by NYSEG) associated with transporting and disposing of contaminated material.

B. Coordination:

1. Coordinate waste disposal as specified under this and other Sections.

C. Related Sections:

1. Section 01 53 53 - Temporary Water Treatment and Management
2. Section 02 51 00 - Decontamination
3. Section 31 23 00 - Excavation and Fill

1.02 REFERENCE STANDARDS

A. Terminology:

1. The following words or terms are not defined but, when used in this Section, have the following meaning:
 - a. "Construction wastewater" is water used for working or processing, or resulting from dewatering or decontamination operations.
 - b. "Contaminated material" is material containing coal tar or site-related contaminants of concern. Examples of potential contaminated material include, but are not limited to, the following:
 - 1) Site grubbing wastes.
 - 2) Construction wastewater.
 - 3) Demolition waste.
 - 4) Excavation waste.
 - 5) Free-phase coal tar.
 - 6) Abandoned gas pipe.
 - c. "Demolition waste" is building and site improvement materials resulting from demolition or selective demolition operations.
 - d. "Disposal" is removal to an offsite location of contaminated material and subsequent recycling, reuse, or disposal in a NYSEG-approved or NYSEG-selected landfill or incinerator conforming to Laws and Regulations and acceptable to authorities having jurisdiction.
 - e. "Excavation waste" is earth; sand; clay; gravel; hardpan; soft, weathered, or decomposed rock; debris; and other materials removed from within the excavation limits that does not comply with requirements for fill, or is in excess of the quantity required for fill.

- f. "Recycle" is recovery of demolition waste or construction waste for subsequent processing in preparation for reuse.

B. Reference Standards:

- 1. The following standards are referenced in this Section:
 - a. American Society for Testing and Materials (ASTM) D5199, Standard Test Method for Measuring the Nominal Thickness of Geosynthetics.
 - b. ASTM D5261, Standard Test Method for Measuring Mass per Unit Area of Geotextiles.
 - c. Geosynthetic Research Institute (GRI) GM17, Standard Specification for Test Methods, Test Properties and Testing Frequency for Linear Low-Density Polyethylene (LLDPE) Smooth and Textured Geomembranes.
 - d. GRI GT12, Standard Specification for Test Methods and Properties for Nonwoven Geotextiles Used as Protection (or Cushioning) Materials.
 - e. United States Environmental Protection Agency (USEPA) SW-846 Method 9095, Paint Filter Liquids Test.

1.03 QUALITY ASSURANCE

A. Regulatory Requirements:

- 1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 29 Code of Federal Regulations (CFR) 1910, Occupational Safety and Health Standards.
 - b. 29 CFR 1926, Safety and Health Regulations for Construction.
 - c. 40 CFR 261.3, 264, and 265, Resource Conservation and Recovery Act (RCRA).
 - d. 49 CFR 171.8, Transportation, Definitions and Abbreviations.
 - e. 6 New York Codes, Rules, and Regulations (NYCRR) 364, Waste Transporter Permits.
 - f. 6 NYCRR 370, Hazardous Waste Management System – General.
 - g. 6 NYCRR 371, Identification and Listing of Hazardous Wastes.
 - h. 6 NYCRR 372, Hazardous Waste Manifest System and Related Standards for Generators, Transporters, and Facilities.
 - i. 6 NYCRR 373, Hazardous Waste Management Facilities.
 - j. 6 NYCRR 375, Environmental Remediation Programs.
- 2. Comply with applicable provisions and recommendations of the following:
 - a. New York State Department of Environmental Conservation (NYSDEC) Management of Coal Tar Waste and Coal Tar Contaminated Soils and Sediment from Former Manufactured Gas Plants (MGPs) (DER-4).
 - b. New York State Department of Transportation (NYSDOT) Standard Specifications and Standard Sheets.
- 3. Obtain required permits and approvals for excavation and fill Work, including work permits from right-of-way owners.
- 4. Comply with requirements of authorities having jurisdiction.

1.04 SUBMITTALS

A. Action Submittals:

- 1. Product Data: Submit manufacturer's product data for proposed soil drying agent.

B. Informational Submittals:

- 1. Excavation Dewatering and Water Management Plan to include at a minimum:
 - a. Proposed excavation dewatering methods (as described in Article 3.04D).

- b. A listing, cut sheets and technical details for each system component and media to be utilized in the Wastewater Treatment Plant (WWTP).
 - c. Equipment size, dimensions, and materials of construction for all system components.
 - d. Pumping and piping types, sizes, and connections.
 - e. Electrical requirements and service connections (as required).
 - f. Monitoring and maintenance requirements for system components.
 - g. A piping and instrumentation diagram showing the piping, proposed equipment and instrumentation for the water management system.
 - h. A water management start-up and monitoring plan
2. Waste Transporter Permits: Submit copy of valid NYSDEC waste transporter permit for each transporter hauling contaminated material.
 3. Maintain (throughout the Project) a written record of the operation and maintenance activities associated with the temporary wastewater treatment system. Such information shall be tabulated, updated daily, and submitted on a weekly basis to NYSEG for review. At a minimum, include the following information (for each day):
 - a. Volume of water extracted and managed for offsite treatment and disposal.
 - b. Disposal facility used for offsite treatment and disposal.
 - c. Type and frequency of monitoring and maintenance activities (if any).
 - d. Other information relevant to the operation, monitoring, and maintenance of the water management system.
 4. Waste profiles for all materials transported for off-site treatment or disposal.
 5. Chain of Custody records.
 6. Disposal Records: Submit for each disposal facility on a monthly basis throughout the Project, and concurrent with each Application for Payment:
 - a. Counter-signed manifests/bills of lading;
 - b. Weight tickets;
 - c. Receipts;
 - d. Invoices.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Deliver and store soil drying agent in closed water-proof super sacks not exceeding 1 ton in weight. Bulk deliveries and onsite storage of soil drying agent are prohibited.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Soil Drying Agent: Provide cement kiln dust, lime kiln dust, or approved non-biodegradable sorbent containing no more than 50 percent reactive (free) calcium oxide (CaO) and magnesium oxide (MgO) by weight.
- B. Influent and Effluent Holding Tanks (Frac Tanks): The Remediation Contractor shall provide two 18,100- and two 21,000-gallon steel water storage tanks for influent and effluent, respectively, for the temporary storage of water to be generated during the remedial construction activities. The tanks shall be equipped with valving, piping, as needed to receive extracted groundwater (and other liquids generated during the Project) and for onsite treatment and discharge to the Clyde wastewater treatment plant. Requirements of the temporary on-site water treatment system are presented in Section 01 53 53 – Temporary Water Treatment and Management. The Remediation Contractor shall provide portable, pre-fabricated spill containment berms for the Frac Tanks.

PART 3 – EXECUTION

3.01 WASTE CHARACTERIZATION

- A. General:
 - 1. Segregate waste streams as required by waste transporters and disposal facilities. Crush excavated rock and debris, as necessary, to render material suitable for disposal.
- B. Site Access and Temporary Controls: Conduct waste management operations to ensure minimum interference with roads, streets, walks, walkways, and other adjacent facilities.
 - 1. Designate and label specific areas of the site necessary for separating and storing wastes.
 - 2. Provide temporary controls in accordance with the Contract Documents.
- C. Waste Characterization:
 - 1. Remediation Engineer shall determine disposal facility characterization requirements for each waste stream.
 - 2. Remediation Engineer shall collect waste characterization samples, and coordinate and pay for laboratory testing.

3.02 DEWATERING OF EXCAVATED SOILS

- A. Dewater excavated soils as necessary to pass Paint Filter testing procedures (USEPA SW-846 Method 9095) before leaving the site, as well as comply with additional moisture requirements from treatment and disposal facilities.
- B. Dewatering may include one or more of the following:
 - 1. Active dewatering of soils before or during excavation in accordance with Section 31 23 00 - Excavation and Fill.
 - 2. Blending of dry soils excavated from above the water table with wet soils excavated from below the water table.
 - 3. Stockpiling excavated soils within the removal limits or within the material staging area on a temporary basis to allow for gravity dewatering.
 - 4. Use of approved soil drying agent to amend soils excavated from below the water table. Unless otherwise directed by NYSEG, excavated soils shall be amended with no more than four percent soil drying agent by weight.
- C. If used, approved drying agents shall only be mobilized to and stored at the site in 1-ton totes. Bulk shipments are prohibited.

3.03 DEBRIS PROCESSING AND SEGREGATION

- A. Segregate waste streams as required by Remediation Contractor's waste transportation and disposal Subcontractors. The Remediation Contractor is responsible for segregating soil from brick, concrete, metal, and other debris not suitable for offsite low temperature thermal desorption (LTTD; for material being sent offsite for thermal treatment).
- B. As necessary, clean excavated debris of coal tar before crushing.
- C. Crush excavated rock and debris, as necessary, to render material suitable for offsite disposal.

- D. Collect and store any free-phase coal tar generated during the work (e.g., from dewatering, demolition of former MGP structures, etc.) shall be collected and stored in new USDOT-compliant containers.

3.04 TEMPORARY STORAGE OF CONTAMINATED MATERIAL

A. General:

1. Direct load visually impacted material for offsite treatment/disposal, to the extent practicable.
2. Provide temporary containment areas adequate to support and withstand traffic loads during the Project. Locate temporary containment areas on NYSEG's property.
3. Waste materials shall be stored in locations approved by NYSEG so as not to endanger the Work, and so that easy access may be had at all times to all parts of the Work area.
4. If onsite staging is necessary, store waste materials in locations (typically with excavation areas for upland soils) approved by NYSEG so as not to endanger the work, and so that easy access may be had at all times to all parts of the work area. Neatly pile and trim stored materials, to cause as little inconvenience as possible to adjoining property. Store visually-impacted material within the limits of the active excavations or alternate locations approved by the NYSEG/Remediation Engineer and/or NYSDEC (within a lined material staging area).
5. Provide safe and adequate vehicle/equipment access to and egress from excavations. Adhere to the access restrictions specified in the Contract Documents relating to excavation support structures. Do not drive, load, or store any equipment or materials within such restricted areas.
6. Take precautions to permit access at all times to fire hydrants, fire alarm boxes, driveways, and other points where access may involve the safety and welfare of the general public. Site access for utility personnel shall be maintained at all times.

B. Materials for Recycling/Reclamation

1. Recover steel (if encountered) for recycling by NYSEG. Remove concrete from steel (e.g., rebar) to the extent practicable and stock pile steel onsite.
2. The Remediation Engineer is responsible for coordinating with NYSEG to recycle recovered steel.

C. Excavated Soil and Debris:

1. It may be necessary to store excavated soils onsite on a temporary basis to accommodate one or more of the following:
 - a. Construction sequencing.
 - b. Disposal facility scheduling issues.
 - c. Soil dewatering requirements.
2. Excavated soils shall only be stockpiled within the limits of excavation or in a properly constructed material staging area.
 - a. Stockpiles shall be kept neatly piled and trimmed, so as to cause as little inconvenience as possible to public travelers or adjoining property holders.
 - b. Stockpiles shall be securely covered at all times (during both working and non-working hours) with minimum 10-mil polyethylene liners when not in use. Liners shall be properly anchored to prevent uplift due to wind conditions and shall be installed to minimize the ponding of precipitation.
 - c. Based on site conditions, NYSEG may elect to limit the maximum allowable stockpile size. Limitations to stockpile size shall not result in any additional cost to NYSEG.
 - d. Stockpiles shall be inspected daily (at a minimum) and any noted deficiencies shall be immediately corrected by the Remediation Contractor to the satisfaction of the NYSEG/Remediation Engineer.

3. Temporary stockpiles shall be transported offsite for disposal within 24 hours of placement unless a longer duration is approved by NYSEG/Remediation Engineer.

D. Construction Wastewater:

1. Water that accumulates within the excavation area shall be removed. Take precautions to minimize the solids present in the water extracted from the excavation area, (e.g., constructing a sump and keeping the intake of the pump off the bottom and away from the sidewalls of the area being dewatered). The sump shall consist of one of or a combination of the following methods:
 - a. A sump backfilled with washed gravel.
 - b. A perforated vessel (i.e., a corrugated metal pipe or drum), wrapped with a non-woven geotextile fabric and/or filled with gravel.
 - c. Straw bales/silt fences around the area where surface water/groundwater is being pumped.
2. All water generated during the Project shall be collected, extracted, and conveyed to the onsite Frac Tanks for storage by the Remediation Contractor.
3. Project-related water shall be treated in the onsite temporary water treatment system and discharged to the Clyde WWTP. The Remediation Engineer shall be responsible for scheduling and coordinating the Clyde WWTP for discharge of all Project-related water.
4. Closely coordinate and monitor the system operations with respect to potential impacts and disruptions to the overall implementation of the Project. Under no circumstances shall the Remediation Contractor discharge any Project-related water to any location without the prior consent of the Remediation Engineer.
5. Continuously monitor the operation of the extraction system and at no time leave the system operating without qualified attending personnel present at the site.

E. Coal Tar:

1. Free-phase coal tar, if encountered, may represent a hazardous waste (subject to characterization by Remediation Contractor) and shall be managed in accordance with all applicable Laws and Regulations, including 6 NYCRR Parts 370-374 and 376, unless and until determined to be non-hazardous.
2. Non-aqueous phase liquid- (NAPL-) containing drums or containers shall be stored in a secure storage area equipped with secondary containment (generally consisting of an impermeable liner and run-on/run-off control). The storage area shall include appropriate signage to identify it as a hazardous waste storage area.
3. Complete and affix to each container a hazardous waste label, with generator information, accumulation start date, and other required information.
4. Containers shall be transported off-site for disposal at an appropriate NYSEG-approved facility within 90 days of the accumulation date.
5. The total volume of NAPL in the satellite accumulation area shall not exceed 50 gallons at any time without prior notification to and approval by NYSEG.
6. Once full, containers will be marked with an accumulation end date by NYSEG/Remediation Engineer and shall be re-located by the Remediation Contractor to a separate, demarcated storage area equipped with secondary containment. The storage area shall include appropriate signage to identify it as a hazardous waste storage area.
7. Coordinate the transportation of containers for offsite for treatment/disposal at a NYSEG-selected facility within 90 days of the end accumulation date.

3.05 LOADING, TRANSPORTATION, AND DISPOSAL

A. Direct-load contaminated material to the extent practicable.

B. Contaminated material shall be transported in vehicles with current New York State Waste Transporter Permits pursuant to 6 NYCRR Part 364. Prepare and submit Waste Transporter

Permits to the Remediation Engineer before mobilization, and maintain current copies of permits onsite for the duration of the Project.

- C. Line all vehicles transporting contaminated material with minimum 6-mil polyethylene sheeting, an equivalent material, or be otherwise water-tight, and shall be equipped with functioning tailgate locks and non-mesh (solid), waterproof tarpaulins.
- D. Load contaminated material in a manner as to avoid contamination of their exteriors, including tires (e.g., loaded with 10-mil polyethylene sheeting draped over the side of the truck).
- E. The Remediation Engineer will prepare a manifest (hazardous or non-hazardous as appropriate) for each load of waste material to be transported offsite for treatment/disposal. Each manifest will be signed by NYSEG (as the Generator) or an authorized agent. Counter-signed waste manifests and facility disposal receipts (indicating the actual quantity of waste received at the treatment/disposal facility) shall be maintained by the Remediation Engineer onsite in the project file.
- F. The Remediation Engineer shall be responsible for the preparation of a log for each disposal facility that indicates, at a minimum, the following information regarding each truck load:
 - 1. Load number (sequential).
 - 2. Uniform Hazardous Waste Manifest Number or Bill of Lading Number.
 - 3. Transporters name
 - 4. Truck ID number (tractor or trailer number).
 - 5. Estimated tare weight.
 - 6. Material type (nonhazardous, hazardous, debris).
 - 7. Destination.
- G. The Remediation Contractor shall transfer collected Project-related water from the onsite temporary wastewater treatment system to a nearby sanitary sewer. The Remediation Engineer shall be responsible for scheduling and coordinating the discharge of all Project-related water.
- H. Inspect vehicles before leaving the site. Clean vehicles of visible soil or debris within temporary decontamination area in accordance with Section 02 51 00 - Decontamination.
- I. Keep all streets, sidewalks, and pavements clean and free from dirt, mud, stone, and other hauled materials. Comply with Section 01 74 13 - Progress Cleaning.
- J. Vehicles transporting contaminated material shall follow approved haul routes as specified in Community Environmental Response Plan.

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SECTION 02 81 00

TRANSPORTATION AND DISPOSAL OF WASTE MATERIALS

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. This Section provides for all labor, materials, tools, equipment, accessories, and appurtenances necessary to transport, treat, and dispose of all construction waste materials.
- B. Related Sections:
 - 1. Section 01 35 43.13 - Environmental Procedures for Hazardous Materials
 - 2. Section 02 61 13 - Excavation and Handling of Contaminated Material

1.02 SUBMITTALS:

- A. Submit proposed disposal facilities from NYSEG's list of approved disposal facilities and associated truck routes for offsite transport and disposal of all construction waste materials.
- B. Submit copy of valid New York State Department of Environmental Conservation (NYSDEC) waste transporter permit for each waste transporter hauling contaminated waste, in accordance with Section 02 61 13 - Excavation and Handling of Contaminated Material.
- C. Provide waste manifests to the Remediation Engineer for review and approval prior to the transport of waste offsite.
- D. Prepare and submit Daily Reports, which will provide a daily summary of waste materials transported offsite.
- E. Provide waste disposal certifications within 25 working days after the date of disposal.

1.03 DEFINITIONS:

- A. Hazardous Waste (Haz): A waste material that is either a listed hazardous waste or a characteristic hazardous waste, as determined by the Remediation Engineer.
- B. Non-Hazardous Waste (Non-Haz): A waste material that is either a non-hazardous waste by definition and/or analysis. Determination of a waste as non-hazardous will be completed by the Remediation Engineer.

PART 2 – PRODUCTS

2.01 CONTAINERS

- A. Supply and transport all containers for staging and disposal of Haz and Non-Haz waste materials.
- B. Ensure that all containers are in good condition upon arrival (i.e., clean, no damage).

- C. The containers shall conform to the specifications listed below:
 - 1. The containers shall be watertight and sift-proof, suitable for truck service, and meet U.S. Department of Transportation (USDOT) and American Association of Railroads requirements.
 - 2. The containers shall be loaded to comply with contract filling requirements and will not exceed USDOT permit standards.

2.02 COVERS AND LINERS

- A. The containers shall be lined with 6 mil polyethylene and covered with a soft tarp cover consisting of 18-ounce rip-stop vinyl with double-stitched web reinforcement (the use of mesh covers is prohibited).

PART 3 – EXECUTION

3.01 GENERAL

- A. Handle, transport, unload, treat, and dispose of waste materials in a manner that is protective of the environment and in accordance with the Contract Documents and all State and Federal transportation and disposal requirements.
- B. Manage and track trucking and movement of containers from staging to loading area, loading, trucking to the destination, and disposal. Manage containers, trucks, and other required equipment to accommodate Project needs.
- C. Complete, manage, and track all transportation and disposal documentation, including bills of lading, waste manifests, container inventory and location information, and certificates of disposal.
- D. The Remediation Contractor shall be responsible for the offsite logistics and shall have direct accountability to the Remediation Engineer.
- E. The Remediation Contractor shall not transport Hazardous or Non-Hazardous wastes offsite until the waste manifests and transport have been approved and signed by the Remediation Engineer.

3.02 DISPOSAL

- A. Hazardous Material: Disposal shall be at a Remediation Engineer-approved hazardous waste disposal facility from NYSEG's list of approved disposal facilities, subject to the United States Environmental Protection Agency (USEPA) approval.
- B. Non-Hazardous Material: Disposal shall be at a Remediation Engineer-approved waste disposal facility from NYSEG's list of approved disposal facilities, subject to USEPA approval.
- C. Remove and transport construction waste materials in a manner that prevents spillage of waste materials onto adjacent areas and surfaces.

3.03 HAULING MATERIAL

- A. When hauling material over the streets or pavement, provide suitably tight-sealing vehicles so as to prevent deposits on the streets or pavements. In all cases where any materials are dropped from the vehicles, clean up the same as often as required to keep the crosswalks, streets, and pavements clean and free from dirt, mud, stone, and other hauled material.
- B. When hauling hazardous materials, abide by all applicable federal, state, and local codes, including, but not limited to, manifesting and placarding (if necessary).

3.04 CONTAINER CLEANING

- A. Proper use and performance of the container liners shall provide separation between the waste and the containers.
- B. A visual inspection of each container shall be performed by the disposal facility to verify that liners have performed properly. If the liners have performed properly, container cleaning shall not be required.
- C. If liner failure has occurred, investigation into the cause shall be required. Container cleaning shall be required in this case.

3.05 MONITORING AND TRACKING

- A. Monitoring and tracking of the transport, treatment, and disposal of waste materials shall be conducted by the Remediation Contractor.

END OF SECTION

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TRANSPORTATION AND DISPOSAL OF HAZARDOUS MATERIALS
02 81 00 – 4
REVISION NO. 00
DATE ISSUED: MAY 2019

NYSEG
REMEDIAL DESIGN
CLYDE FORMER MGP SITE
VILLAGE OF CLYDE, WAYNE COUNTY, NEW YORK

SECTION 31 05 16

AGGREGATES FOR EARTHWORK

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Furnishing temporary and permanent fill materials from offsite sources as specified in this Section for the backfilling of excavations, restoration of surfaces, and other purposes required by the Contract Documents.
2. Offsite materials include:
 - a. Top Soil
 - b. General Fill
 - c. Sand
 - d. Type 2 Crushed Gravel
 - e. Crushed Stone
 - f. Groundwater amendment.
3. Onsite reuse material includes clean, excavated overburden approved by the Remediation Engineer for use as excavation backfill.

B. Related Sections:

1. Section 31 05 19.13 - Geotextiles for Earthwork
2. Section 31 23 00 - Excavation and Fill
3. Section 32 90 00 - Planting

1.02 REFERENCES:

A. Unified Soil Classification System (USCS)

B. American Society for Testing and Materials (ASTM)

1. D422 - Standard Test Method for Particle-Size Analysis of Soils.
2. D698 – Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12,400 ft-lbf/ft³[600 kN-m/m³]).
3. D2216 – Standard Test Methods for Laboratory Determination of Water (Moisture) Content of Soil and Rock by Mass.
4. D2974 – Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.
5. D4318 – Test Methods for Liquid Limit, Plastic Limit, and Plasticity Index of Soils.
6. D4972 – Standard Test Method for pH of Soils.
7. D5519 – Standard Test Method for Particle Size Analysis of Natural and Man-Made Rip Rap Materials.
8. E329 – Standard Specification for Agencies Engaged in Construction Inspection, Testing, or Special Inspection.

C. United States Environmental Protection Agency (USEPA) Methods 6010B/7000A, 9010B, and 9030B (inorganics), 8270C (semi-volatile organic compounds [SVOCs]), 8260B (volatile organic compounds [VOCs]), and 8082 (polychlorinated biphenyls [PCBs]), and 8081A/8080A and 8141A (pesticides), 8151A (herbicides), and Modified Method 537 (per- and polyfluoroalkyl substances [PFAS]).

- D. New York State Department of Environmental Conservation (NYSDEC) Technical Guidance for Site Investigation and Evaluation (DER-10).
- E. New York State Department of Transportation (NYSDOT), Standard Specifications for Construction and Materials, January 2019.

1.03 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Remediation Contractor's Testing Laboratory: Retain the services of an independent testing laboratory to perform quality assurance and field quality control testing required in this Section. Testing laboratory shall comply with ASTM E329, and shall be experienced in the types of testing required.
 - 2. Remediation Engineer's Testing Laboratory:
 - a. The Remediation Engineer shall retain the services of an independent testing laboratory authorized to operate in the New York State to perform quality assurance testing required in this Section (except for organic content, nutrient content, and pH quality assurance testing, which is to be performed by the Remediation Contractor).
 - b. Testing laboratory shall have current National Environmental Laboratory Accreditation Program (NELAP) and New York State Environmental Laboratory Approval Program (ELAP) certification for specific methods (including Perfluorooctane Sulfonate [PFOA] and Perfluorooctanoic Acid [PFOS]) they are performing from a recognized state or federal laboratory accreditation program.
 - c. The laboratory shall be capable of providing detection limits at or below the lower of the 6 NYCRR Part 375 residential use and groundwater protection soil cleanup objectives to allow for comparison of the analytical results to those objectives.
 - 3. Offsite Fill Sources: Obtain all offsite general fill and subbase material from an NYSDEC-permitted mine, pit, or quarry approved by NYSDOT for furnishing aggregates for NYSDOT projects.
 - 4. Imported fill materials shall be free of foreign chemical contaminants and meet the restricted commercial soil cleanup objectives (SCOs) set forth in 6 New York Codes, Rules and Regulations (NYCRR) Part 375 and included in Appendix 5 of DER-10.
 - 5. Physical Property Testing of Fill Materials:
 - a. Collect samples and perform testing of proposed fill materials in the laboratory and in the field to demonstrate compliance of the Work with the Scope of Work.
 - b. Submit a written report to National Grid and Remediation Contractor with results of each test.
 - c. The Remediation Contractor's testing laboratory shall perform analytical testing of clean fill materials as required in this Section.
 - d. The Remediation Contractor's Testing shall perform the ASTM tests listed below for each material source, and the designated fill classification, to verify that the soil materials meet the technical requirements of this Section:

| Parameter | ASTM Test Method | Frequency | Fill Classification |
|------------------------|------------------|--|---|
| Soil Classification | D-2487 | One per 1,500 cy or each change in Material Type | General Fill, Topsoil, and Sand |
| Particle-Size Analysis | D-422 | One per 1,500 cy or each change in Material Type | General Fill, Topsoil, and Sand |
| Particle-Size Analysis | C-136 | One per 1,500 cy or each change in Material Type | Crushed Stone and Type 2 Crushed Gravel |

| Parameter | ASTM Test Method | Frequency | Fill Classification |
|------------------|------------------|--|---------------------------------|
| Atterberg Limits | D-4318 | One per 1,500 cy or each change in Material Type | General Fill, Topsoil, and Sand |
| Modified Proctor | D-1557 | One per 1,500 cy or each change in Material Type | General Fill, Topsoil, and Sand |
| pH | D-4972 | One per 1,000 cy | Topsoil |
| Organic Content | D-2974 | One per 1,000 cy | Topsoil |

1.04 SUBMITTALS:

- A. At least 3 weeks prior to delivery of fill materials, submit all Physical and Analytical Test Results listed in Paragraph 2.01 to the Remediation Engineer as a single submittal for review. Remediation Engineer will initiate review of the Physical and Analytical Test Result submittal once all portions of the required submittal have been received from the Remediation Contractor.
- B. Action Submittals:
 - 1. Product data: submit manufacturer's data and specifications for the following:
 - a. Groundwater amendment
- C. Qualifications Statements:
 - 1. Remediation Contractor's Testing Laboratory: Submit name and qualifications of testing laboratory to be employed, and qualifications of testing laboratory's personnel that will perform quality assurance and field quality control testing required in this Section. If more than one laboratory will be employed, submit qualifications statement for each laboratory.
 - 2. Offsite Fill Sources: Submit Supplier name, source address, copy of NYSDEC mining permit, and proof of NYSDOT approval, as required, for each proposed source of offsite fill material.
- D. Delivery Tickets: Submit copy of delivery ticket for each load of offsite material delivered to the site. Each delivery ticket shall indicate Supplier name and source address, project name, contract number, date, material type, NYSDOT item number when applicable, and quantity delivered.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Delivery
 - 1. A bill of lading shall accompany each load of offsite fill material transported and delivered to the site.
 - a. Bills of lading shall include, at a minimum, the following information:
 - 1) Source name and address.
 - 2) Date.
 - 3) Truck number.
 - 4) Name of purchaser.
 - 5) Name of shipping company.
 - 6) Project name and location.
 - 7) Transporter's name.
 - 8) Load description (fill material type).
 - 9) Gross and net weight of load.

- b. Submit bills of lading to NYSEG upon delivery.
- B. Storage and Protection
 - 1. Store fill materials in locations approved by NYSEG so as not to endanger the Work, and to provide easy access at all times to all parts of the Work area.
 - 2. Take special precautions to permit access at all times to fire hydrants, fire alarm boxes, driveways, and other points where access may involve the safety and welfare of the general public.
 - 3. Temporary Stockpiles
 - a. Maintain stockpiles in a neat and trimmed manner, so as to cause as little inconvenience as possible to public travelers or adjoining property holders.
 - b. Securely cover stockpiles at all times (during both working and non-working hours) with minimum 10-mil polyethylene liners when not in use. Liners shall be properly anchored to prevent uplift due to wind conditions and shall be installed to minimize the ponding of precipitation.
 - c. Based on site conditions, NYSEG may elect to limit the maximum allowable stockpile size. Limitations to stockpile size shall not result in any additional cost to NYSEG.
 - d. Inspect stockpiles daily (at a minimum) and any noted deficiencies shall be immediately corrected by the Remediation Contractor to the satisfaction of NYSEG.

1.06 SCHEDULING

- A. Anticipate and schedule Work, including excavation, backfilling, and restoration, to accommodate the sampling, analysis and review of fill materials by the Remediation Engineer.

PART 2 – PRODUCTS

2.01 GROUNDWATER AMENDMENT

- A. Commercially available groundwater amendment shall be amended to backfill.
 - 1. Product or Manufacturer:
 - a. IXPOR® 75C Calcium Peroxide manufactured by Solvay Chemicals (IXPER 75C)
 - b. Or Design Engineer-approved equal
 - 2. Amount of oxygen available of approximately 17% by weight
 - 3. Groundwater amendment application rate of 5% by weight will be required:

2.02 FILL MATERIALS

- A. Topsoil:
 - 1. Topsoil shall be unfrozen friable clayey loam free from clay lumps, stones, roots, sticks, stumps, brush, and foreign objects.
 - 2. Material shall be free of foreign chemical contaminants and shall comply with the soil cleanup objectives for restricted-commercial use, as set forth in 6 NYCRR 375-6.8(b).
 - 3. Topsoil shall have a pH ranging between 5.5 and 7.6, as determined by laboratory testing of representative samples.
 - 4. Topsoil shall have an organic content between 6 and 12 percent, as determined by laboratory testing of representative samples.
 - 5. Topsoil placement shall meet the specifications set forth in Section 32 90 00 - Planting.
- B. General Fill:

1. General Fill shall consist of soil free of loam, organic matter; clays, rock, and gravel larger than three inches in any dimension; debris; waste; frozen materials; organic material; and other deleterious matter. Snow, ice, and frozen soil shall not be permitted.
2. General fill shall have a liquid limit not greater than 45, and plasticity index not greater than 25.
3. Material shall be free of foreign chemical contaminants and shall comply with the soil cleanup objectives for restricted-commercial use, as set forth in 6 NYCRR 375-6.8(b).
4. Excavated materials from the site, that comply with the general fill requirements presented in the Contract Documents, may be used for general fill when approved for reuse by the Remediation Engineer.
5. Material shall be natural or prepared mixtures and consist of predominately of hard, durable particles of stone or gravel and sand and free of organic material.
6. Gradation shall be as specified in Table 31 23 00-A.

**TABLE 31 23 00-A
GRADATION REQUIREMENTS FOR GENERAL FILL**

| U.S. Sieve Size | Percentage by Weight Passing Sieve |
|-----------------|------------------------------------|
| 3-inch | 100 |
| No. 200 | 10-30 |

C. Sand:

1. Sand material shall meet NYSDOT requirements for Sand Backfill as described in Section 733-15 and Table 733-15A of the NYSDOT Standard Specifications for Construction and Materials and as shown in Table 31 23 00-B.

**TABLE 31 23 00-B
GRADATION REQUIREMENTS FOR SAND**

| U.S. Sieve Size | Percentage by Weight Passing Sieve |
|-----------------|------------------------------------|
| ½ inch | 100 |
| ¼ inch | 90-100 |
| No. 200 | 0-5 |

D. Type 2 Crushed Gravel:

1. Crushed Gravel shall meet Material Designation 703-02 requirements described in Section 703.02 and Table 703 of the NYSDOT Standard Specifications for Construction and Materials as shown in Table 31 23 00-C, or shall be functionally equivalent as reviewed and approved by the Remediation Engineer.

**TABLE 31 23 00-C
GRADATION REQUIREMENTS FOR TYPE 2 CRUSHED GRAVEL**

| U.S. Sieve Size | Percentage by Weight Passing Sieve |
|-----------------|------------------------------------|
| 1 ½ inch | 100 |
| 1 inch | 90-100 |
| ½ inch | 0-15 |
| No. 200 | 0-1 |

E. Crushed Stone:

1. Crushed stone shall be Material Designation for size 4A Crushed Stone as described in Section 703B and Tables 703-3 and 703-4 of the NYSDOT Standard Specifications shown in Table 31 23 00-D. It shall consist of clean, durable, sharp-angled fragments of rock of uniform quality. The crushed stone shall have the following gradation as determined by ASTM C-136:

**TABLE 31 23 00-D
GRADATION REQUIREMENTS FOR CRUSHED STONE**

| U.S. Sieve Size | Percentage by Weight Passing Sieve |
|------------------------|---|
| 3 - inch | 100 |
| 2 - inch | 35-70 |
| 1 ½ - inch | 0-20 |

2.03 SOURCE QUALITY CONTROL

A. General Information

1. Submit to the Remediation Engineer for review the following general information:
 - a. Vendor's name and location of fill material source(s).
 - b. Description of the Work for which the fill material is proposed for use.

B. Physical Tests

1. Sample and test all proposed fill materials for the physical properties listed below, and shall submit a summary of the physical test results to the Remediation Engineer for review at least 3 weeks prior to delivery of fill materials to the site. At a minimum, all proposed fill materials shall be sampled and tested as follows:
 - a. Geotechnical Testing: Submit samples to a geotechnical testing laboratory to determine the grain size distribution (ASTM D422) and moisture-density relationship (ASTM D698) of the materials from each source.
 - 1) The grain size distribution of each material type will be compared to the appropriate material gradation specified in this Section.
 - 2) Moisture-density relationships will be used (where appropriate) as a point of comparison for the in-place density tests to be performed by the Remediation Contractor's geotechnical testing laboratory on the compacted fill materials, as specified in Section 31 23 00 - Excavation and Fill.
2. Sample and test proposed topsoil fill materials for the physical properties listed below, and shall submit a summary of the physical test results to the Remediation Engineer for review at least 3 weeks prior to delivery of topsoil fill materials to the site. At a minimum, all proposed fill materials shall be sampled and tested as follows:
 - a. Geotechnical Testing: Submit samples to a geotechnical testing laboratory to determine pH (ASTM D4972) and organic content (ASTM D2974) of the materials from each source.

C. Analytical Tests

1. Sample off-site fill materials with greater than 10% by weight passing the No. 80 sieve, as determined by geotechnical testing specified above in accordance with Subdivision 5.4(e) of DER-10.
2. Collect a combination of discrete and composite samples of each proposed fill material in accordance with Subdivision 5.4(e) and Table 5.4(e)10 of DER-10.
3. The analytical testing shall be performed to demonstrate that the offsite materials meet the requirements set forth in 6 NYCRR Part 375-6.8(b) Restricted-Commercial Use Soil Cleanup Objectives. For each offsite fill source, collect a combination of discrete (grab) and composite samples based on the type of fill source (e.g., virgin mine/pit, former manufacturing site, etc.) and the characterization guidelines set forth in Table 5.4(e)10 of DER-10. Submit discrete and composite samples to a chemical testing laboratory certified by the New York State Department of Health (NYSDOH) Environmental Laboratory Approval Program (ELAP):
 - a. At least one sample of each proposed fill material from each proposed source shall be tested for the following:
 - 1) Discrete Grab Samples:

- a) Target Compound List (TCL) Volatile Organic Compounds (VOCs) by USEPA SW-846 Method 8260B.
 - 2) Composite Samples:
 - a) TCL SVOCs by USEPA SW-846 Method 8270D.
 - b) PCBs by USEPA SW-846 Method 8082.
 - c) Pesticides by USEPA SW-846 Method 8081B.
 - d) Herbicides by USEPA SW-846 Method 8151A.
 - e) TAL metals by USEPA EPA SW-846 Method 6010C/6020A/7471B.
 - f) Total mercury by USEPA SW-846 Methods 7471.
 - g) Total cyanide by USEPA SW-846 Method 9012B.
 - h) pH by USEPA SW-846 Method 9045C.
 - i) PFAS by USEPA Modified Method 537.
 - 4. Analytical results shall be accompanied by Analytical Services Protocol (ASP) Category B deliverables. Electronic data deliverables shall also be submitted in the NYSDEC approved format.
- D. Remediation Engineer has the right to reject fill materials based on the results of any of the above physical or analytical test analyses. If fill materials are rejected for any reason, the Remediation Contractor will be responsible for providing an alternate fill source and performing/ accommodating additional testing, as required, at no additional cost to NYSEG.

PART 3 – EXECUTION

3.01 PLACEMENT:

- A. Place and compact fill materials in accordance with the Contract Drawings and Specification Section 31 23 00 – Excavation and Fill.

3.02 EROSION AND SEDIMENT CONTROLS

- A. Provide temporary erosion and sediment controls in accordance with the Contract Drawings.

END OF SECTION

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SECTION 31 05 19.13

GEOTEXTILES FOR EARTHWORK

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Remediation Contractor shall provide all labor, materials, tools, equipment, and services as shown, specified, and required to furnish and install geotextiles.

B. Related Sections:

1. Section 31 05 16 - Aggregates for Earthwork

1.02 REFERENCE STANDARDS

A. The following standards are referenced in this Section:

1. American Association of State Highway and Transportation Officials (AASHTO) M 288, Standard Specification for Geotextile Specification for Highway Applications.

1.03 QUALITY ASSURANCE

A. Qualifications:

1. Manufacturer: Geotextile manufacturer shall be a specialist in the manufacture of geotextile separation and stabilization fabrics, and shall have produced and successfully installed a minimum of five million square feet.

1.04 SUBMITTALS

A. Action Submittals:

1. Product Data: Submit geotextile manufacturer's data, specifications, installation instructions, dimensions, and lot and roll numbers of the field-delivered materials.

B. Informational Submittals:

1. Certificates: Submit affidavit certifying that the geotextile furnished complies with the requirements of this Section. Do not ship geotextile to the site until affidavit is submitted to Remediation Engineer.

1.05 DELIVERY, STORAGE, AND HANDLING

- A. Each roll of geotextile delivered to the site shall be labeled by the manufacturer identifying the manufacturer's name, product identification, lot number, roll number, and roll dimensions.
- B. All rolls and packages shall be inspected by Remediation Contractor upon delivery to the site. Remediation Contractor shall notify Remediation Engineer if any loss or damage exists to geotextile. Replace loss and repair damage to new condition, in accordance with manufacturer's instructions.
- C. Geotextile shall be protected from ultraviolet light exposure, precipitation or other inundation, mud, dirt, dust, puncture, cutting, or any other damaging or deleterious conditions. Geotextile rolls shall be shipped and stored in relatively opaque and watertight wrappings.

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. SKAPS Industries.
- B. TenCate Mirafi.
- C. U.S. Fabrics.
- D. Hanes Geo Components
- E. Approved equal.

2.02 MATERIALS

- A. Type 1 Non-Woven Geotextile
 1. Non-woven geotextile shall be of needle-punched construction and consist of long-chain polymeric fibers or filaments composed of polypropylene. The non-woven geotextile shall be chemically inert to naturally encountered chemicals, acids, and bases and resist biological degradation.
 2. Non-woven geotextile shall be used as a separation layer between dissimilar material types as shown in material staging areas, containment areas, and decontamination areas.
 3. The non-woven geotextile shall meet Geosynthetics Research Institute (GRI) GT12 specifications and have the following minimum average roll values (MARVs):

**TABLE 31 05 19.13-A
REQUIREMENTS FOR NON-WOVEN GEOTEXTILE**

| Property | ASTM Test Method | Units | MARV |
|------------------------------|------------------|-------------------------|------|
| Unit Weight | D5261 | oz/yd ² | 8 |
| Grab Tensile Strength | D4632 | lb | 205 |
| Grab Tensile Elongation | D4632 | % | 50 |
| Trapezoidal Tear Strength | D4533 | lb | 80 |
| CBR Puncture Strength | D6241 | lb | 500 |
| Apparent Opening Size | D4751 | U.S. Sieve | 80 |
| Permittivity | D4491 | sec ⁻¹ | 1.4 |
| Flow Rate | D4491 | gal/min/ft ² | 95 |
| UV Resistance (at 500 hours) | D4355 | %strength retained | 70 |

- B. Type 2 Non-Woven Geotextile
 1. Non-woven geotextile shall be of needle-punched construction and consist of long-chain polymeric fibers or filaments composed of polypropylene. The non-woven geotextile shall be chemically inert to naturally encountered chemicals, acids, and bases and resist biological degradation.
 2. Non-woven geotextile shall be used as a cushioning layer above and below the high-density polyethylene (HDPE) geomembrane liner in material staging areas, containment areas, and decontamination areas.
 3. The non-woven geotextile shall meet GRI GT12 specifications and have the following MARVs:

**TABLE 31 05 19.13-A
REQUIREMENTS FOR NON-WOVEN GEOTEXTILE**

| Property | ASTM Test Method | Units | MARV |
|------------------------------|-------------------------|-------------------------|-------------|
| Unit Weight | D5261 | oz/yd ² | 16 |
| Grab Tensile Strength | D4632 | lb | 370 |
| Grab Tensile Elongation | D4632 | % | 50 |
| Trapezoidal Tear Strength | D4533 | lb | 145 |
| CBR Puncture Strength | D6241 | lb | 900 |
| Apparent Opening Size | D4751 | U.S. Sieve | 80 |
| Permittivity | D4491 | sec ⁻¹ | 0.6 |
| Flow Rate | D4491 | gal/min/ft ² | 45 |
| UV Resistance (at 500 hours) | D4355 | %strength retained | 70 |

C. Woven Geotextile

1. Woven geotextile shall be composed of high-tenacity polypropylene yarns woven into a stable network such that the yarns retain their relative position. The woven geotextile shall be chemically inert to naturally encountered chemicals, acids, and bases and resist biological degradation.
2. Woven geotextile shall be used as a stabilization layer between the soil fill and sub-base course.
3. The woven geotextile shall meet AASHTO M 288-05 requirements for a Class 1 stabilization geotextile and have the following MARVs:

**TABLE 31 05 19.13-B
REQUIREMENTS FOR WOVEN GEOTEXTILE**

| Property | ASTM Test Method | Units | MARV |
|------------------------------|-------------------------|-------------------------|-------------|
| Grab Tensile Strength | D4632 | lb | 315 |
| Grab Tensile Elongation | D4632 | % | 15 |
| Trapezoidal Tear Strength | D4533 | lb | 113 |
| CBR Puncture Strength | D6241 | lb | 900 |
| Permittivity | D4491 | sec ⁻¹ | 0.05 |
| Flow Rate | D4491 | gal/min/ft ² | 4 |
| AOS | D4751 | U.S. Sieve | 40 |
| UV Resistance (at 500 hours) | D4355 | %strength retained | 70 |

PART 3 – EXECUTION

3.01 INSPECTION

- A. Examine the areas and conditions under which the Work will be performed and notify Remediation Engineer in writing of conditions detrimental to the proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected in a manner acceptable to Remediation Engineer.

3.02 PREPARATION

- A. Excavate or fill subgrade, as required, to bring subgrade to elevations shown or indicated. Maintain all angles of repose. Confirm that subgrade is at proper elevations and that no further earthwork is required to bring the subgrade to proper elevations. Provide subgrade

elevations that slope parallel to finished grade and in the direction shown on the Design Drawings.

- B. Remove all stones greater than two inches in any dimension, construction debris, trash, rubble, and all other extraneous materials from the subgrade.
- C. Notify Remediation Engineer that subgrade has been prepared, and obtain Remediation Engineer's approval before installing geotextile.

3.03 INSTALLATION

- A. Geotextiles shall be placed (rolled out) in the direction of most frequent vehicular travel.
- B. Adjoining edges of geotextiles shall be overlapped 12 inches.
- C. Geotextiles shall be weighted with sandbags or equivalent when required. Such sandbags shall be installed during placement and shall remain until replaced with cover materials.
- D. During placement of geotextiles, care shall be taken not to entrap in the geotextile stone, excessive dust, mud, or moisture that could damage or cause clogging of the geotextile, or hamper subsequent seaming.
- E. Use proper tools to cut and size geotextiles; exercise care while cutting geotextiles.
- F. Geotextiles shall not be exposed to precipitation prior to being installed, and shall not be exposed to direct sunlight for more than 15 days.

3.04 GEOTEXTILE REPAIR

- A. Any holes or tears in the fabric shall be repaired as follows:
 - 1. On Slopes: A fabric patch shall be sewn into place using a double sewn lock stitch (1/4 inch to 3/4 inch apart and no closer than one inch from any edge). Should any tear exceed 10 percent of the width of the roll, that roll shall be removed from the slope and replaced.
 - 2. Non-Slopes: A fabric patch shall be spot-seamed in place with a minimum of 24 inches of overlap in all directions.

3.05 PLACEMENT OF COVER MATERIALS

- A. Place cover materials in such a manner as to ensure that geotextiles are not damaged or dislodged.

END OF SECTION

SECTION 31 05 19.16

GEOMEMBRANES FOR EARTHWORK

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Furnishing and installing 40 mil textured high-density polyethylene (HDPE) geomembrane liner for material staging areas (if constructed) and decontamination areas as specified in this section and in accordance with the manufacturer's recommendations/specifications.
- B. Quality assurance (QA)/quality control (QC) testing of HDPE geomembrane liner as specified in this section and in accordance with the manufacturer's recommendations/specifications.

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

- A. American Society for Testing and Materials International (ASTM). The following ASTM specifications are referenced in this section and are to be considered part of this section:
 - 1. D1004 - Standard Test Method for Tear Resistance (Graves Tear) of Plastic Film and Sheeting
 - 2. D1238 - Standard Test Method for Flow Rates of Thermoplastics by Extrusion Plastometer
 - 3. D1505 - Standard Test Method for Density of Plastics by the Density-Gradient Technique
 - 4. D1603 - Standard Test Method for Carbon Black Content in Olefin Plastics
 - 5. D3895 - Standard Test Method for Oxidative Induction Time of Polyolefins by Differential Scanning Calorimetry
 - 6. D4218 - Standard Test Method for Determination of Carbon Black Content in Polyethylene Compounds by the Muffle-Furnace Technique
 - 7. D4833 - Standard Test Method for Index Puncture Resistance of Geomembranes and Related Products
 - 8. D5199 - Standard Test Method for Measuring Nominal Thickness of Geotextiles and Geomembranes
 - 9. D5397 - Standard Test Method for Evaluation of Stress Crack Resistance of Polyolefin Geomembranes Using Notched Constant Tensile Load Test
 - 10. D5596 - Standard Test Method for Microscopic Evaluation of the Dispersion of Carbon Black in Polyolefin Geosynthetics
 - 11. D5994 - Standard Test Method for Measuring Core Thickness of Textured Geomembranes
 - 12. D6392 - Standard Test Method for Determining the Integrity of Nonreinforced Geomembrane Seams Produced Using Thermo-Fusion Methods
 - 13. D6693 - Standard Test Method for Determining Tensile Properties of Nonreinforced Polyethylene and Nonreinforced Flexible Polypropylene Geomembranes
 - 14. D7240 - Standard Practice for Leak Location using Geomembranes with an Insulating Layer in Intimate Contact with a Conductive Layer via Electrical Capacitance Technique (Conductive Geomembrane Spark Test)
 - 15. D7466 - Standard Test Method for Measuring the Asperity Height of Textured Geomembrane
- B. Geosynthetics Research Institute (GRI). The following GRI test methods are referenced in this section and are to be considered part of this section:

1. GM13 - Test Methods, Test Properties, and Testing Frequencies for HDPE Smooth and Textured Geomembranes

- C. Where reference is made to one of the above codes, standards, specifications, or publications, the revisions in effect at the time of bid shall apply.

1.03 SUBMITTALS

- A. Written certification that the minimum test values provided in Part 2.02 of this section are guaranteed by the manufacturer.
- B. Manufacturer's standard warranty for the geomembrane.
- C. Results of QC tests conducted by the manufacturer. QC test results shall include lot and roll identification numbers representative of the field-delivered material. At a minimum, results shall be submitted for:
1. Thickness (ASTM D5994).
 2. Asperity Height (ASTM D7466).
 3. Density (ASTM D1505).
 4. Tensile Properties (ASTM D6693).
 5. Tear Resistance (ASTM D1004).
 6. Puncture Resistance (ASTM D4833).
 7. Stress Crack Resistance (ASTM D5397).
 8. Carbon Black Content (ASTM D1603).
 9. Carbon Black Dispersion (ASTM D5596).
 10. Oxidative Induction Time (OIT) (ASTM D3895 or D5885).
- D. Remediation Contractor's written certification (provided prior to the installation of the geomembrane) that the field-delivered material has not been damaged due to improper transportation, handling, or storage.
- E. HDPE lot and roll number of field-delivered material.
- F. Product Data

PART 2 – PRODUCTS

2.01 ACCEPTABLE MANUFACTURERS

- A. Solmax Geosynthetics.
- B. GSE Lining Technology, Inc.
- C. Poly-Flex, Inc.
- D. Approved equal.

2.02 MATERIALS

- A. HDPE Geomembrane
1. HDPE geomembrane liner shall meet the following minimum test values:

**TABLE 31 05 19.16-A
REQUIREMENTS FOR HDPE**

| Property | Test Method | Test Value |
|---|-------------------------|---|
| Thickness, mil • Lowest individual for any of the 10 values | ASTM D5994 | 40 mil 36 mil |
| Density | ASTM D1505 | 0.940 g/cm ³ |
| Tensile Properties (see Note 1) • Break Strength • Yield Strength • Break Elongation • Yield Elongation | ASTM D6693 (Type IV) | 60 lb/in-width 84 lb/in-width 100% 12% |
| Tear Resistance | ASTM D1004 | 28 lb |
| Puncture Resistance | ASTM D4833 | 60 lb |
| Carbon Black Content (range) | ASTM D1603/4218 | 2.0 – 3.0% |
| Carbon Black Dispersion | ASTM D5596 | See Note 2 |
| Asperity Height, mil | ASTM D7466 | 18 mil |
| Notched Constant Tensile Load (See Note 3) | ASTM D5397 | 300 hrs |
| Oxidative Induction Time | ASTM D3895 | >100 min. |

Notes:

- Machine direction (MD) and cross machine direction (XMD) average values should be on the basis of 5 test specimens each direction.
 - Yield elongation is calculated using a gage length of 1.3 inches
 - Break elongation is calculated using a gage length of 2.0 inches
 - Dispersion only applies to near spherical agglomerates. 9 of 10 views shall Category 1 or 2. No more than 1 view from Category 3.
 - The notched constant tensile load (NCTL) test is not appropriate for testing geomembranes with textured or irregular rough surfaces. Test should be conducted on smooth edges of textured rolls or on smooth sheets made from the same formulation as being used for the textured sheet materials. The yield stress used to calculate the applied load for the NCTL test should be the manufacturer's mean value via manufacturer quality control testing.
- The geomembrane shall be free of defects, such as holes or blisters, or any contamination by foreign matter.
 - QC testing shall be performed by an independent laboratory at the Remediation Contractor's expense. QC test results shall be submitted to the Remediation Engineer for review a minimum of two weeks prior to mobilizing the material to the site.

B. Welding Material

- The resin used in the welding material must be identical to the liner material.
- All welding materials shall be of a type recommended and supplied by the manufacturer and shall be delivered in the original sealed containers, each with an indelible label bearing the brand name, Manufacturer's mark number, and complete directions as to proper storage.

2.03 DELIVERY, HANDLING, AND STORAGE

- The Remediation Contractor shall be liable for any damage incurred by the liner material prior to and during transportation to the site.
- The handling, storage, and care of the liner material prior to and following installation at the site are the responsibility of the Remediation Contractor.

- C. Any damage caused to the liner material during delivery, handling, and storage shall be repaired at the Remediation Contractor's expense.

2.04 WARRANTY

- A. The Remediation Contractor shall provide a written warranty stating that the materials and workmanship provided are free from defects for the duration of the project.
- B. The written warranty shall provide for the complete repair or replacement of the liner material, including all incidental costs associated with the defect, at no cost to NYSEG.
- C. All repairs or replacements shall be performed within a reasonable period of time, as determined by NYSEG and/or Remediation Engineer.

PART 3 – EXECUTION

3.01 INSTALLATION

A. General Requirements

1. The liner shall be placed, seamed, and tested in accordance with the manufacturer's recommendations/specifications.
2. The installation of geomembrane liner shall be performed on geotextile-covered surfaces free from stones or other protruding objects.
3. No liner shall be placed onto an area that has become softened by precipitation. Appropriate methods of moisture control are the responsibility of the Remediation Contractor.
4. The liner shall not be installed on frozen soil material. Such material shall be removed and replaced with acceptable material.

All surfaces on which the liner is to be installed shall be acceptable to the Remediation Engineer at the time of installation.

B. Placement

1. The placement of geomembrane panels shall follow all instructions on the boxes or wrapping containing the material that describe the proper methods of unrolling the panels.
2. Liner deployment shall not be undertaken if weather conditions will preclude material seaming following deployment.
3. During placement, geomembrane shall be visually inspected for uniformity, tears, punctures, blisters, or other damage or imperfections. Any such damage or imperfections shall be immediately repaired and re-inspected at the Remediation Contractor's expense.
4. No equipment used shall damage the liner by handling, trafficking, leakage of hydrocarbons, or other means.
5. No personnel working on the liner shall smoke, wear damaging shoes, or engage in other activities that could damage the liner.
6. The prepared surface underlying the liner shall not be allowed to deteriorate after acceptance, and shall remain acceptable up to the time of liner installation and until completion of the project.
7. Adequate temporary loading and/or anchoring (e.g., sand bags), not likely to damage the liner, shall be placed to prevent uplift by wind (in case of high winds, continuous loading is recommended along edges of panels to minimize risk of wind flow under the panels).
8. Direct contact with the liner shall be minimized. In high-traffic areas, the liner shall be protected by geotextiles, extra geomembrane, or other suitable materials.

9. The method used to unroll or adjust the panels shall not cause excessive scratches or crimps in the liner and shall not damage the supporting soil or underlying geotextile (where applicable).
10. The method used to place the panels shall minimize the potential for wrinkles (especially differential wrinkles between adjacent panels).
11. Any damage to the geomembrane panels or portions of the panels as a result of placement shall be replaced or repaired at the Remediation Contractor's expense. The decision to replace or repair any panel or portions of panels shall be made by the Remediation Engineer.

3.02 SEAMING

- A. All personnel performing seaming operations shall be qualified by experience or by successfully passing seaming tests.
- B. Generally, all seams whether field or factory, shall be oriented parallel to the line of slope, not across slope. At liner penetrations and corners, the number of seams shall be minimized.
- C. The area of the liner to be seamed shall be cleaned and prepared in accordance with the manufacturer's specified procedures. Any abrading of the liner shall not extend more than 0.5 inch on either side of the weld. Care shall be taken to eliminate or minimize the number of wrinkles and "fish-mouths" resulting from seam orientation.
- D. Field seaming is prohibited when either the air or sheet temperature is below 32°F, when the sheet temperature exceeds 122°F, or when the air temperature is above 104°F. At air or sheet temperatures between 32°F and 40°F, seaming shall be conducted directly behind a preheating device. In addition, seaming shall not be conducted when the liner material is wet from precipitation, dew, fog, etc., or when winds are in excess of 20 miles per hour.
- E. Seaming shall not be performed on frozen or excessively wet underlying surfaces.
- F. Seams shall have an overlap beyond the weld large enough to perform destructive peel tests, but shall not exceed 5 inches.
- G. The Remediation Contractor shall perform trial seams on excess liner material. A 1-foot by 3-foot seamed liner sample shall be fabricated with the seam running down the 3-foot length in the center of the sample. Such trial seaming shall be conducted prior to the start of each seaming succession for each seaming crew, every 4 hours, after any significant change in weather conditions or liner temperature, or after any change in seaming equipment. From each trial seam, four field test specimens shall be taken. The test specimens shall be 1-inch by 12-inch strips cut perpendicular to the trial seam. Two of these specimens shall be shear tested and two shall be peel tested using a field tensiometer, and recorded as pass (failure of liner material) or fail (failure of seam). Upon initial failure, a second trial seam shall be made; if both trial seams fail, then the seaming device and its operator shall not perform any seaming operations until the deficiencies are corrected and two successive passing trial seams are produced. Completed trial seam samples cannot be used as portions of a second sample and must be discarded.
- H. Where "fish-mouths" occur, the material shall be cut, overlapped, and an overlap weld shall be applied. Where necessary, patching using the same liner material shall be welded to the geomembrane.
- I. Acceptable seaming methods include:

1. Extrusion welding using extrudate with identical physical, chemical, and environmental properties.
 2. Hot-wedge welding using a proven fusion welder and master seamer.
- J. The seaming device shall not have any sharp edges that might damage the liner. Where self-propelled seaming devices are used, it shall be necessary to prevent "bulldozing" of the device into the underlying soil.
- K. The Remediation Contractor shall perform non-destructive seam testing on all field seams.
1. Non-destructive seam testing shall be conducted under the direct observation of the Remediation Engineer.
 2. Air pressure testing may be used if double-track hot-wedge welding has been used to seam the liner. Using approved pressure testing equipment, the following procedures shall be followed:
 - a. Seal both ends of the air channel separating the double-track hot-wedge welds.
 - b. Insert pressure needle into air channel and pressurize the air channel to 27 pounds per square inch (psi).
 - c. Monitor pressure gauge for 3 minutes and determine whether pressure is maintained without a loss of more than 2 psi.
 - d. If the pressure test fails, then localize the leak and mark the area for repair.
 3. Vacuum testing shall be used on all seams not tested using air pressure testing. Using an approved vacuum box, the following procedures shall be followed:
 - a. Apply a soapy water mixture over the seam.
 - b. Place vacuum box over soapy seam and form a tight seal.
 - c. Create a vacuum by reducing the vacuum box pressure to 5 psi for 10 seconds.
 - d. Observe through the vacuum box window any bubbles.
 - e. Where bubbles are observed, mark seam for repair.
 - f. Move vacuum box further down seam, overlapping tested seam by 3 inches.
 - g. Where hot-wedge seaming has been performed, the overlap shall be cut back to the weld.
- L. In addition to non-destructive seam testing, the Remediation Contractor will perform destructive testing.
- The destructive testing procedures are as follows:
1. Test samples will be prepared by the Installer every 500 feet of seam length, a minimum of one test for each seaming machine per day, or more frequently at the discretion of NYSEG or Remediation Engineer. Sample location and size will be selected by NYSEG or Remediation Engineer. The sample size (12 x 56 inches) will be large enough to produce three sets of test specimens for the following tests:
 - a. Seam Shear Strength, ASTM D6392.
 - b. Peel Adhesion, ASTM D6392.
 2. Ten specimens will compose a set. Five of these will be tested for peel and the other five for shear strength. Each specimen will be 1-inch wide and 12-inches long with the field seam at the center of the specimen. The 56-inch sample length will first be cut at the ends to produce two field peel test specimens. The remaining 54 inches will be divided up into thirds and one-third submitted to the Remediation Contractor, one-third to the independent testing laboratory, and one-third to NYSEG or Remediation Engineer for storage and future reference.
 3. Test specimens will be considered passing if the minimum values presented in Table 31 05 19.16-B below are met or exceeded for four of the five test specimens tested by the independent laboratory. All acceptable seams will lie between two locations where samples have passed.
 4. The cost of destructive testing will be borne by the Remediation Contractor.

5. Seams will meet the following minimum specification values listed in the table below and as listed in GRI Test Method GM19:

TABLE 31 05 19.16-B
REQUIREMENTS FOR DESTRUCTIVE TESTING

| Seam Properties | Specification Limit | Test Method |
|--|---------------------------|-------------|
| Shear Strength at Yield (lb/in width) | 120 pounds per inch (ppi) | ASTM D6392 |
| Peel Adhesion – Fusion | 91 ppi and Film tear bond | ASTM D6392 |
| Peel Adhesion - Extrusion | 78 ppi and Film tear bond | ASTM D6392 |

3. If a sample fails destructive testing, the Remediation Contractor shall ensure that: the seam is reconstructed in each direction between the location of the sample that failed and the location of the next acceptable sample; or the welding path is retraced to an intermediate location at least 10 feet in each direction from the location of the sample that failed the test, and a second sample is taken for an additional field test. If this second test sample passes, the seam must be then reconstructed between the location of the second test and the original sampled location. If the second sample fails, the process must be repeated.
All costs for work performed to achieve passing tests along with costs for retesting will be borne by the Remediation Contractor.
4. If double-track hot-wedge welding is used, NYSEG or Remediation Engineer and the Installer must agree on the track weld that will be used in the destructive testing. The weld chosen inside or outside must be consistently tested, and must pass according to the criteria identified in Table 31 05 19.16-B above.
5. All holes created by cutting out destructive samples will be patched by the Remediation Contractor immediately with an oval patch of the same material welded to the geomembrane using extrusion welding. The patch seams will be tested using a vacuum box and using the procedures described above. Work will not proceed with materials covering the geomembrane liner until passing results of destructive testing have been achieved.
6. At the ends of each field seam, two field test specimens will be taken and field tested with a field tensiometer. Both specimens must pass prior to placing the membrane in the anchor trench or continuing with additional seams. Failure of these specimens will require correcting the seaming device and repair of the preceding seam according to the failure testing and procedures described above.

3.03 LINER REPAIR

- A. All imperfections, flaws, construction damage, and seam failures shall be repaired by the Remediation Contractor at no additional cost to NYSEG.
- B. Acceptable repair methods include:
 1. Patching, used to repair holes, tears, undispersed raw materials, and contamination by foreign matter.
 2. Grinding and re-welding, used to repair small sections of extruded seams.

3. Spot Welding or Seaming, used to repair pinholes or other minor, localized flaws.
4. Capping, used to repair large lengths of failed seams.
5. Topping, used to repair areas of inadequate seams which have an exposed edge.
6. Removing bad seams and replacing with a strip of new material welded into place.

END OF SECTION

SECTION 31 09 13

GEOTECHNICAL INSTRUMENTATION AND MONITORING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Conducting all activities on the project in such a manner that damage is prevented to adjacent pipes, structures, property and Work, and such that the ground vibrations and excavation support system displacements are consistently maintained below the maximum levels specified in this Section.
- B. Providing and installing the geotechnical instrumentation required under this Section including tiltmeters and Seismographs.
- C. Notifying the Remediation Engineer prior to conducting any vibration producing activity, and conducting appropriate monitoring at nearby structures in accordance with the plan prepared by the Remediation Contractor's independent specialist and approved by the Remediation Engineer.
- D. Protecting/monitoring existing installed construction and utilities, including, but not limited to, the Electrical Substation, fences, and property boundaries as shown on the Design Drawings.
- E. Coordinating work with public (New York 811) and private utility companies that have any above-ground, below-ground, or other utility lines within or adjacent to the Site.
- F. Provide and install optical settlement monitoring points on the substation.
- G. Protecting vibration monitoring equipment, benchmarks, settlement monitoring points and other monitoring equipment that are existing or installed as required by this section.
- H. Related Sections:
 - 1. Section 31 23 00 – Excavation and Fill
 - 2. Section 31 50 00 – Excavation Support and Protection

1.02 QUALITY ASSURANCE

- A. Qualifications:
 - 1. Geotechnical Monitoring Technician:
 - a. Employ and retain at the site a geotechnical monitoring technician with experience and capability of performing all geotechnical monitoring tasks required of the Remediation Contractor. Remediation Contractor's geotechnical monitoring technician shall have a minimum of five years direct construction or environmental monitoring experience, and appropriate health and safety training in accordance with Laws and Regulations.
 - b. Responsibilities include, but are not necessarily limited to, the following:
 - 1) Installing and removing all geotechnical instrumentation.
 - 2) Calibrating geotechnical instrumentation at frequencies recommended by the manufacturer.
 - 3) Coordinating instrument maintenance and repairs.
 - 4) Collecting and recording instrument readings.

- 5) Managing a database of geotechnical monitoring data at the site.
- 6) Preparing and submitting daily geotechnical monitoring reports in accordance with Article 1.06 of this Section.
- 7) Responding to exceedances of alert or action levels during the Work.
- 8) Notifying Construction Manager, Remediation Engineer, and appropriate Remediation Contractor personnel when alert or action levels are exceeded during the Work.

B. Instrument Calibration:

1. A factory calibration shall be conducted on all geotechnical instrumentation at the place of manufacture before shipment to the site. Review calibration record for each instrument and match to instrument serial number. Submit factory calibration records to Remediation Engineer upon request.
2. During the Work, calibrate geotechnical instrumentation at frequencies recommended by the manufacturer, in accordance with manufacturer's calibration and quality assurance requirements. Document all instrument readings, field reference checks, and calibrations in a dedicated log.
3. Preventative maintenance and repair of geotechnical instrumentation, if required, shall only be performed by qualified personnel, or authorized representatives of the manufacturer.
4. Prepare and retain at the site electronic or written records of all instrument calibrations, preventative maintenance, and repairs. Submit to Remediation Engineer upon request.

C. Pre-Installation Testing:

1. Examine geotechnical instrumentation and accessories upon delivery to the site for damage due to shipment.
2. Verify instruments and accessories are in working order before installing.
3. Immediately remove from the site, and replace at Remediation Contractor's expense, damaged or malfunctioning instruments and accessories.

1.03 JOB CONDITIONS

- A. Install and monitor engineering seismographs and tiltmeters adjacent to or on adjacent structures within 50 feet of the active work area, for the purpose of monitoring and ensuring compliance with the vibration and ground and structure deformation limits specified herein.
- B. Conduct vibration monitoring using personnel experienced in the correct placement and monitoring of engineering seismographs. Engineering seismographs shall be capable of recording vibration levels from 0.02 to 10 inches per second, at frequencies from 2 to 250 Hz.
- C. Vibration monitoring shall be performed by personnel experienced in the correct placement and monitoring of engineering seismographs.
- D. Install and monitor settlement monitoring points on the electrical substation for the purpose of monitoring and ensuring compliance with structure deformation limits specified herein.
- E. Settlement point survey reading shall be made by the Remediation Contractor using a Land Surveyor licensed in the State of New York. Survey measurements shall be taken to a precision of 0.05 inch.
- F. Establish a benchmark for settlement readings of the structures on a stable feature beyond the zone of influence of the construction.

- G. Settlement monitoring shall be conducted once daily when installing soldier piles greater than 75 feet from the nearest substation component.
- H. Settlement monitoring shall be conducted twice daily when installing soldier piles less than 75 feet from the nearest substation component and all dewatering, excavation, and backfilling activities. Monitoring can be conducted once daily during backfilling activities once the backfilling has progressed to 4 feet below ground surface.
- I. Conduct deflection monitoring using personnel experienced in the correct placement and monitoring of tiltmeters.
- J. Vibration and deflection monitoring shall be initiated just prior to and performed continuously during shoring installation at the site. Conduct vibration monitoring several times during the day when within 50 feet of a monitored structure, as directed by the Remediation Contractor's independent specialist. Perform deflection monitoring daily during excavation and backfill using tiltmeters.
- K. Notify Remediation Engineer immediately if any vibration monitor or settlement point reading exceeds the threshold or limiting values specified herein.

1.04 SUBMITTALS

- A. Informational Submittals:
 - 1. Submit daily geotechnical monitoring reports to Remediation Engineer by 9:00 a.m. the next working day after the monitoring event in accordance with Article 1.06 of this Section.
 - 2. Submit two copies of each property survey report to Remediation Engineer no later than five (5) business days from completion of each survey event.

1.05 MOVEMENT AND VIBRATION LIMITS

- A. Maximum vibrations at existing structures and utilities shall not exceed the following as a result of demolition work, excavation, shoring installation or other activities of the Remediation Contractor:
 - 1. All structures and utilities on site: Threshold limit, maximum peak particle velocity (PPV) of 0.60 in/sec; limiting value, maximum PPV of 0.80 in/sec.
- B. Maximum deflection of soldier piles shall not exceed the following as a result of demolition, excavation, or other activities of the Remediation Contractor:
 - 1. Sheet piles: Threshold limit, maximum deflection of 0.8 inches; limiting value, maximum deflection of 1.0 inches.
- C. Maximum settlement of the substation shall not exceed the following as a result of installation of hydraulic barrier wall, excavation, or other activities of the Remediation Contractor:
 - 1. All components associated with the electrical substation: Threshold limit, maximum movement of 0.3 inches; limiting value, maximum movement of 0.5 inches.
- D. Actions if threshold or limiting values are exceeded:
 - 1. If threshold limits of vibration or deflection are exceeded, the Remediation Contractor shall notify Remediation Engineer immediately and shall submit to the Remediation Engineer, within 24 hours of the exceedance, a submittal indicating the activity causing the exceedance and the steps the Remediation Contractor has taken and will take to prevent further exceedances of the threshold limit.

2. If limiting values of vibration or movement are exceeded, all work by the Remediation Contractor in the vicinity of the exceedance shall stop until a meeting takes place between the Remediation Contractor and the Remediation Engineer to assess the causes of the exceedance. A submittal shall be prepared and submitted to the Remediation Engineer indicating what activity caused the exceedance and what steps the Remediation Contractor will take to prevent further exceedances of the limits. No work in the vicinity of the exceedance shall be restarted until the submittal is reviewed and approved by the Remediation Engineer.
3. If any damage(s) are identified by the Remediation Contractor or Remediation Engineer, the Remediation Contractor shall prepare a submittal, for submittal to Remediation Engineer indicating a proposed means of repairing the damage(s) and preventing further damage. No work in the vicinity of the damage(s) shall be restarted until the submittal is reviewed and approved by Remediation Engineer and the approved repair is completed. No claims for schedule impacts, costs of repair(s), new equipment, etc. associated with the damage(s) are acceptable.

1.06 RECORD KEEPING

- A. The Remediation Contractor shall prepare deflection monitoring reports for all excavation, excavation support installation, and backfill activities. The deflection monitoring report will include the following information for each tiltmeter:
 1. Serial number of tiltmeter.
 2. Location/designation of tiltmeter.
 3. Deflection results to date, including baseline monitoring data.
 4. Date, time, and reading for each monitoring event. Include cumulative readings and change from baseline readings
 5. Current work activities.
 6. Weather conditions.
 7. Name of the responsible person in charge.
 8. Signature and title of person making record entries.
- B. The Remediation Contractor shall prepare a record of vibration monitoring activities. The record will include the following information:
 1. Serial number of Engineering Seismograph.
 2. Location
 3. Start time, stop time, and duration of monitoring.
 4. Maximum peak particle velocity for monitoring period.
 5. Histograms of longitudinal, transverse, and vertical readings in units of inches per second.
 6. Weather conditions.
 7. Name of the responsible person in charge.
 8. Signature and title of person making record entries.
- C. The Remediation Contractor shall prepare a record of settlement monitoring activities. The record will include the following information:
 1. Make and model of settlement monitors.
 2. Serial number of settlement monitors.
 3. Location of the settlement monitors.
 4. Date, time, and reading for each monitoring event. Include cumulative readings and change from baseline reading.
 5. Weather conditions.
 6. Name of the responsible person in charge.
 7. Signature and title of person making record entries.

- D. Exceedances (if any) of the alert levels and action levels specified in this Section. Provide the following:
 - 1. Time, location, and instrument reading of exceedance.
 - 2. Weather conditions.
 - 3. Summary of Work being performed at time of exceedance.
 - 4. Corrective actions taken or to be taken in response to exceedance.
- E. Provide a site plan showing approximate locations of all geotechnical instrumentation at the site. Label each instrument with its serial number.
- F. Provide copies of these records to Remediation Engineer on a daily basis.
- G. Submit a final report documenting all monitoring activities within twenty (20) days of completion of the excavation, demolition, backfilling, or any shoring installation. This report shall consist of the following:
 - 1. As-constructed drawings showing each monitored location point.
 - 2. Results of vibration, settlement, and deflection monitoring.

1.07 INSTRUMENTATION

- A. Install all instruments in the presence of Remediation Engineer. Maintain access to the work area for the purpose of observing instrumentation and obtaining data. Determine the elevation and location of all instrumentation a minimum of one week prior to excavation, demolition, or shoring installation.
- B. The Remediation Contractor shall be responsible for all damage incurred to utilities and structures during geotechnical instrumentation installation.
- C. Protect and maintain instrumentation until the end of the Project.
- D. Provide and maintain well-delineated protection devices at the surface of all instrumentation.
- E. Provide installation plans for monitoring devices.

1.08 DELIVERY, STORAGE AND HANDLING

- A. All instruments will be calibrated and in working order at the time of installation and will be verified on site by Remediation Engineer immediately prior to installation.
- B. All appropriate precautions for working with electricity, as indicated in the Remediation Contractor's HASP, will be followed at time of installation.

PART 2– PRODUCTS

2.01 ENGINEERING SEISMOGRAPH

- A. Provide portable seismographs with triaxial geophones for the continuous monitoring of vibrations during pile driving and pile removal operations.
- B. Manufacturer: Provide products of one of the following:
 - 1. GeoSonics/Vibra-Tech, Inc.
 - 2. Instantel

3. Or equal
- C. Equipment Measuring Specifications:
 1. Range: 0.01 to 10 inches per second.
 2. Resolution: 0.005 inch per second.
 3. Accuracy: Plus-or-minus five percent.
 4. Frequency Response Range: Two to 250 Hertz.
 5. Equipment shall come complete with readout displays, data loggers, protective housings, software, and other accessories recommended by manufacturer for the intended application.

2.02 TILTMETERS

- A. Provide bi-axial tiltmeters for monitoring deflection of temporary steel soldier piling during excavation and backfilling operations in each excavation area.
- B. Manufacturer: Provide products of one of the following:
 1. Durham Geo-Enterprises, Inc.
 2. Jewell Instruments, LLC.
 3. Rieker, Inc.
 4. RST Instruments, Ltd.
 5. Or equal.
- C. Angular Range: Plus-or-minus 10 degrees.
- D. Resolution: 0.005 degree.
- E. Furnish tiltmeters, complete with readout displays, data loggers, mounting hardware, protective housings, software, and other accessories recommended by manufacturer for the intended application.

2.03 OPTICAL SURVEY POINTS

- A. Optical survey equipment shall meet a 0.05-inch tolerance in order to know that any variances in movements are not due to the equipment tolerance, but rather they are due to actual movements due to construction or excavation activities.
- B. Optical Survey Points shall be fixed prisms or an approved equivalent that will allow points to be optically surveyed.

PART 3 – EXECUTION

3.01 INSTALLATION

- A. General:
 1. Supply and install geotechnical instrumentation, as per the manufacturer's recommendations, in accordance with the Remediation Contractor's Monitoring Plan and Installation Plan or as directed by Remediation Engineer. Vibration monitoring locations shall be approved by Remediation Engineer.
 2. Notify Remediation Engineer at least 24 hours prior to installing each instrument.

3. Lay out and stake individual instrument locations for approval of Remediation Engineer. Adjust locations when requested, and obtain Remediation Engineer's acceptance of layout before installing. Make minor adjustments as required.
- B. Engineering Seismograph:
1. Prior to commencing any construction activity that could cause vibration, firmly mount engineering seismographs on structures within 50 feet of the active work area to establish baseline vibration monitoring. Structures include, but are not limited to, existing Electrical Substation, fences, property boundaries.
 2. Use installation methods consistent with the manufacturer's recommendations with consideration of the specific substrate of this site.
- C. Tiltmeters:
1. Install tiltmeters following completion of shoring operations and before excavating greater than 3 feet below ground surface within temporary sheet pile enclosures.
 2. Install tiltmeters as shown or indicated on the Design Drawings or as directed by Remediation Engineer.
 3. Install tiltmeters on the inside face of temporary steel sheet piling, one inch down from the top edge.
- D. Optical Survey Points:
1. Contractor shall have a qualified surveyor establish a benchmark and optical survey points, as shown on the Design Drawings.
 2. The Remediation Engineer shall be notified at least 24 hours prior to installing each instrument.
 3. Install optical survey points in approved locations (horizontal and vertical) and in accordance with manufacturer's specifications.

3.02 MONITORING

- A. Engineering Seismograph Monitoring Schedule:
1. Baseline Monitoring:
 - a. Perform baseline vibration monitoring, at locations shown on the Design Drawings, before initiating any shoring operations at the site.
 - b. Baseline monitoring shall be performed continuously between the hours of 7:00 a.m. and 5:00 p.m. over a period of not less than three working days.
 2. Routine Monitoring: Continuously monitor vibrations, at locations shown or indicated on the Design Drawings or as directed by the Remediation Engineer, during all shoring and pile removal operations.
- B. Tiltmeter Monitoring Schedule:
1. Baseline Monitoring: Perform baseline tiltmeter monitoring following completion of shoring operations and before excavating greater than 3 feet below ground surface within temporary sheet pile enclosures.
 2. Routine Monitoring: Collect and record tiltmeter readings twice per day, in the morning and afternoon, during excavation and backfilling operations within temporary sheet pile enclosures.
- C. Optical Survey Points:
1. Baseline Monitoring: Survey and document, by robotic total station, the baseline coordinates (northing and easting) and elevation of each optical survey point before any hydraulic wall or soldier pile installation. Provide survey data to the Remediation Engineer no later than the end of the subsequent work day.

2. Routine Monitoring: Survey and document, by robotic station, the coordinates (northing and easting) and elevation of each optical survey point at the frequency defined in Article 1.03 of this Specification.

3.03 DAMAGE TO INSTRUMENTATION

- A. The Remediation Contractor shall protect all instruments and appurtenant fixtures, leads, connections, and other components of instrumentation from damage due to construction operations, weather, and vandalism.
- B. If an instrument is damaged or inoperative, the Remediation Contractor shall repair or replace the damaged or inoperative instrument within 48 hours with no additional cost to NYSEG. Remediation Engineer will be the sole judge of whether repair or replacement is required.

3.04 REMOVAL

- A. Completely remove geotechnical instrumentation and protective barriers when no longer required. Repair damage caused by geotechnical instrumentation and their removal, and restore the site to condition required by the Scope of Work. If restoration of damaged areas is not specified, restore to pre-construction condition.
- B. Tiltmeters:
 1. Remove tiltmeters upon completion of backfilling operations and before initiating pile removal Work within temporary soldier pile enclosures.
- C. Seismographs:
 1. Remove seismographs at the end of each work day, and only after all pile driving and pile removal operations have been completed for the day.
 2. Download monitoring data from seismographs at the end of each day.
- D. Repair any damaged or disturbed surfaces to original condition unless otherwise directed by the Remediation Engineer.
- E. All instrumentation shall become the property of the Remediation Contractor.

END OF SECTION

SECTION 31 11 00

CLEARING AND GRUBBING

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Remediation Contractor shall provide all labor, materials, equipment, and incidentals required to perform clearing and grubbing as shown and specified in the Contract Documents.
2. The Work includes removing from the site and disposing of trees, shrubs, stumps, roots, brush, logs, vegetation, topsoil, rubbish, and other objectionable material.
3. Pay all fees associated with transporting and disposing of debris resulting from clearing and grubbing, unless otherwise paid by NYSEG.
4. Limits of Clearing and Grubbing Work: Clear and grub only as necessary to facilitate installing temporary facilities as well as performing soil removal, soil cover construction, and backfilling activities.

B. Related Sections:

1. Section 01 41 26 - Storm Water Pollution Prevention Plan and Permit
2. Section 01 57 00 - Temporary Controls
3. Section 01 74 19 - Construction Waste Management and Disposal
4. Section 02 61 33 – Excavation and Handling of Contaminated Material

1.02 WARRANTY

- ###### A.
- Remediation Contractor shall warrant that Work performed under this Section will not permanently damage trees, shrubs, turf, and plants designated to remain, or other adjacent work, facilities, or property. If damage resulting from Remediation Contractor's operations becomes evident during the correction period, Remediation Contractor shall replace damaged items and property at no additional cost to NYSEG.

PART 2 – PRODUCTS (NOT USED)

PART 3 – EXECUTION

3.01 PREPARATION

A. Protection:

1. Throughout the Project, protect existing site improvements, including streets, drives, and Underground Facilities to remain (if any), and adjacent property and structures. Repair damage caused by Remediation Contractor to original condition or replace in kind, to satisfaction of Remediation Engineer, and at no additional cost to NYSEG.
2. Protect trees, shrubs, vegetation, and grassed areas to remain by providing temporary fencing, barricades, wrapping, or other methods shown, specified, or accepted by Remediation Engineer. Correct at Remediation Contractor's expense damage caused by Remediation Contractor outside the limits of clearing and grubbing Work.

3. For broad-canopied trees, temporary fencing or barricades shall be placed no closer than the dripline of the tree. For narrow-canopied trees, temporary fencing or barricades shall be placed at a distance equal to the stem diameter in inches, converted to feet, and doubled, such that a 10-inch diameter tree would be protected to 20 feet.
 4. Do not remove trees without the approval of NYSEG or Remediation Engineer, unless shown or indicated for removal on the Design Drawings.
 5. Do not locate construction equipment, stored materials, or stockpiles within the drip line of trees and vegetation to remain.
- B. Site Preparation:
1. Obtain, pay costs associated with, and comply with applicable permits, if any, required for clearing and grubbing Work.
 2. Delineation of Clearing and Grubbing Limits:
 - a. Locate and clearly flag trees, vegetation, and other items to remain within the limits of clearing and grubbing.
 - b. Provide flagging to delineate limits of areas to be cleared or grubbed. Review at site with Remediation Engineer before initiating clearing and grubbing Work.
 - c. Replace flagging that is lost, removed, or destroyed until clearing and grubbing Work is complete and Remediation Engineer allows removal of flagging.
 3. Erosion and Sediment Controls:
 - a. Install applicable erosion and sediment controls before initiating clearing and grubbing Work.
 - b. Comply with Section 01 41 26 - Storm Water Pollution Prevention Plan and Permit and erosion and sediment control requirements of Section 01 57 00 - Temporary Controls.
 - c. Adjust, relocate, or install additional erosion and sediment controls as clearing and grubbing Work progresses to undisturbed areas of the Work areas.

3.02 CLEARING AND GRUBBING

- A. Remove all trees, shrubs, stumps, roots, brush, logs, rubbish, and debris within the construction work limits as required to perform the work or as indicated in the Contract Documents. Blanket tree removal is prohibited.
- B. Trees, shrubs, and other dense vegetation shall be removed to ground surface.
- C. Trees and shrubs to remain that have been damaged or require trimming shall be treated and repaired under the direction of a qualified arborist, or other professional with qualifications acceptable to Remediation Engineer. Trees and shrubs intended to remain, that are damaged beyond repair or that are removed, shall be replaced by Remediation Contractor at no additional cost to NYSEG.

3.03 DISPOSAL OF CLEARED AND GRUBBED MATERIALS

- A. Shrubs shall be chipped onsite; wood chips may be used as mulch during site restoration activities.
- B. Trees shall be cut into manageable-sized pieces to support transport and disposition.
- C. Properly transport and dispose of cleared and grubbed materials, as necessary at appropriate, NYSEG-approved facilities in accordance with Laws and Regulations.

1. Site-Clearing Wastes: Comply with Section 01 74 19 - Construction Waste Management and Disposal.
2. Site-Grubbing Wastes: Comply with Section 02 61 13 - Excavation and Handling of Contaminated Material.

END OF SECTION

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SECTION 31 23 00
EXCAVATION AND FILL

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
1. Provide all labor, materials, equipment, and incidentals required to perform all excavating, filling, and grading as shown, specified, and required to complete the Work.
 2. Excavation and fill includes, but is not limited to, rough grading, trenching, handling of surplus materials, maintenance of excavations, dewatering, backfilling operations, and compaction.
- B. Related Sections:
1. Section 01 35 49 – Community Air Monitoring Plan
 2. Section 01 53 53 – Temporary Water Treatment and Management
 3. Section 01 57 00 - Temporary Controls
 4. Section 02 61 13 - Excavation and Handling of Contaminated Material
 5. Section 31 05 16 - Aggregates for Earthwork
 6. Section 31 50 00 - Excavation Support and Protection
 7. Section 32 90 00 - Planting

1.02 REFERENCES

- A. American Society for Testing and Materials (ASTM)
1. ASTM D698, Standard Test Methods for Laboratory Compaction Characteristics of Soil Using Standard Effort (12 400 ft-lb/ft³ [600 kN-m/m³]).
 2. D6938 Standard Test Method for In-Place Density and Water Content of Soils and Soil-Aggregate by Nuclear Methods (Shallow Depth)

1.03 QUALITY ASSURANCE

- A. Regulatory Requirements:
1. Laws and Regulations applying to the Work under this Section include, but are not limited to, the following:
 - a. 29 Code of Federal Regulations (CFR) 1926.650 through 29 CFR 1926.652, Subpart P – Excavations.
 - b. 6 New York Codes, Rules and Regulations (NYCRR) 360, Solid Waste Management Facilities.
 - c. 6 NYCRR 375, Environmental Remediation Programs.
 - d. 12 NYCRR 23-4.1 through 12 NYCRR 23-4.5, Subpart 23-4 – Excavation Operations.
 - e. 16 NYCRR 753, Protection of Underground Utilities.
 2. Comply with applicable provisions and recommendations of the following:
 - a. New York State Department of Environmental Conservation (NYSDEC) Technical Guidance for Site Investigation and Evaluation (DER-10).
 - b. New York State Department of Transportation (NYSDOT) Standard Specifications and Standard Sheets.
 3. Obtain required permits and approvals for excavation and fill Work, including work permits from right-of-way owners.

1.04 SUBMITTALS

- A. Excavation and Backfilling Plan: Submit an acceptable plan for excavation, backfilling, and related Work no less than 21 days prior to initiating trenching, excavation and/or backfilling activities. The plan shall include the following information:
1. Name and qualifications of Remediation Contractor's "competent person" in charge of earthwork activities.
 2. Plan for protecting existing structures and underground utilities from damage while performing the Work.
 3. Proposed trenching, excavating, dewatering, backfilling, and compaction procedures. Where different procedures or equipment will be used for different types of material or at different locations at the site, indicate where each procedure and equipment item will be used.
 4. Proposed groundwater amendment application and backfilling procedures.
 5. List of equipment required to complete all trenching, excavation, grading, dewatering, backfilling, compaction, and hydraulic barrier removal activities.
 6. Planned sequence of all earthwork activities, including coordination with excavation support systems, dewatering, and hydraulic barrier removal.
 7. Proposed disposal facilities and planned truck traffic routes to the facilities.
- B. Excavation Dewatering Plan: Submit proposed means and methods for dewatering and water management no less than 21 days prior to initiating dewatering activities. The plan shall include the following information:
1. Detailed description of dewatering methodology, including sequencing for containing, sampling, and disposal of impacted and unimpacted water
 2. Extraction equipment types (i.e. sumps, pumps, hoses, well points)
 3. Planned sequence of dewatering activities, including coordination with earthwork, hydraulic barrier removal.
 4. Volume and quantity of onsite frac tanks for temporary water storage.
 5. Location of temporary dewatering system components, which will allow continuous dewatering operation without interfering with the Work to the extent practicable.
- C. Backfilling Test Reports:
1. Backfilling test results
 2. Test locations
 3. Backfill placement methods
- D. Quality Assurance Test Results Submittals:
1. Results of in-place density tests performed on fill materials (to be determined using ASTM D6938).
 2. Provide testing results for in-place compaction testing on a daily basis such that the Remediation Engineer can determine if the requirements of this Section have been met.
 3. Within five (5) days of the conclusion of backfill and compaction testing activities, provide a final compaction testing results report that includes results of compaction tests and a plan depicting the locations of compaction tests.
- E. Survey Submittals:
1. Submit preconstruction, base of excavation, and final base of excavation survey results.
 2. Remediation Contractor shall not commence backfill activities until final base of excavation surveys results have been reviewed by the Remediation Engineer and NYSEG.

- F. Keep a daily log of dewatering, storage, and water disposal that is readily available for inspection by the Remediation Engineer and NYSEG. The log will, at minimum, keep the following:
1. Daily total gallons generated by dewatering activities.
 2. Site-specific daily weather and precipitation records.
 3. Observations or activities relevant to the dewatering operations, including, but not limited to, equipment repairs/replacements, media change-outs, service interruptions, etc.

1.05 EXISTING SITE CONDITIONS

- A. The Contract Documents show or indicate the presence of existing structures and utilities adjacent to or within the limits of the Work. Such information was obtained from existing records and is not guaranteed to be correct or complete. The Remediation Contractor shall explore ahead of trenching, excavation, or other subsurface Work to determine the exact location of all existing structures and utilities. Existing structures and utilities, not identified for removal, shall be supported and protected from damage by Remediation Contractor.
- B. The Remediation Contractor shall notify Dig Safely New York at least 72 hours prior to initiating any construction activities.
- C. Damage to any existing structure and/or utilities, not identified for relocation, shall be immediately repaired or replaced in kind by the Remediation Contractor at no additional cost to NYSEG.
- D. The Remediation Contractor shall coordinate shut off services with utility owners, where specified in the Contract Documents or as required, to complete the Work.
- E. Do not interrupt existing utilities serving facilities occupied and used by NYSEG or others, except when such interruption is indicated in the Contract Documents or when allowed in writing by Remediation Engineer after acceptable temporary utility services are provided by Remediation Contractor for the affected structure or property.

PART 2 – PRODUCTS

2.01 TEMPORARY BARRIERS

- A. Temporary barriers for excavation protection shall meet the following minimum requirements:
1. Snow fence-type fencing (or equivalent) with a minimum height of four feet.
 2. Fence shall be constructed of vertical hardwood slats measuring no less than 1.5 inches by ¼ inch, interwoven with strands of horizontal wire, or shall be of equivalent plastic construction.
 3. Posts:
 - a. Shall be steel, either “U”-, “Y”-, or “T”-shaped, or channel section.
 - b. Shall have a nominal weight of no less than 1/3 pound per linear foot, exclusive of the anchor.
 - c. Shall have tapered anchors weighing no less than 0.67 pound, each firmly attached by means of welding, riveting, or clamping.
 - d. Shall have corrugations, knobs, notches, or studs placed and constructed to engage a substantial number of fence line wire in the proper position.
 4. Provide each post with sufficient quantity of galvanized wire fasteners or clamps, of not less than 0.120 inch in diameter, for attaching fence wire to post.

2.02 ODOR, VAPOR AND DUST CONTROL

- A. Requirements for odor, vapor and dust control are presented in the Scope of Work and the Design Drawings.

2.03 BACKFILL

- A. Fill materials shall meet the requirements of Section 31 05 16 – Aggregates for Earthwork.
- B. If applicable, stabilizing/drying agents may include lime, or Portland cement, or other approved materials.
- C. Drum-type, power-driven, hand-guided vibratory compactor, or by hand-guided vibratory plate tamper. Remediation Contractor may propose alternate compaction methods. Alternate compaction methods shall be reviewed and approved by the Remediation Engineer.

PART 3 – EXECUTION

3.01 NOTIFICATION

- A. Provide Remediation Engineer with sufficient notice and with means to examine areas and conditions under which excavating, filling, and grading Work will be performed. Remediation Engineer will advise Remediation Contractor in writing when Remediation Engineer is aware of conditions that may be detrimental to proper and timely completion of the Work. Do not proceed with the Work until unsatisfactory conditions are corrected.
- B. The Remediation Contractor shall handle, transport, unload, treat, and dispose of waste materials in a manner that is protective of the environment and in accordance with the Contract Documents and all State and Federal transportation and disposal requirements.
- C. Notification of Changes:
 - 1. Differing Site Conditions: Promptly notify the Remediation Engineer and NYSEG through written and verbal notice upon discovery and before the following conditions are further disturbed:
 - a. Physical conditions that differ materially from those indicated in Contract Documents.
 - b. Unknown physical conditions at site, of an unexpected nature, which differ materially from those ordinarily encountered and are generally recognized as inherent in the type of work provided in this project.
 - 2. Project Delays: Upon discovery, promptly provide written and verbal notice to NYSEG of delays in schedule due to equipment malfunction or weather.

3.02 PROTECTION

- A. Prior to initiating earthwork activities, the Remediation Contractor shall install erosion and sediment control measures in accordance with Section 01 57 00 - Temporary Controls.
- B. The Remediation Contractor shall provide odor, vapor, and dust controls in accordance with Section 01 57 00 - Temporary Controls and Section 01 35 49 – Community Air Monitoring Plan (CAMP).
- C. The Remediation Contractor shall provide temporary barriers surrounding excavations and excavation work areas to provide temporary protection to persons and property. The barriers shall meet the requirements of Part 2.01 of this Section.

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- D. Install excavation support systems per requirements of Section 31 50 00 – Excavation Support and Protection and the Design Drawings.

3.03 PREPARATION

- A. Pre-Construction Survey:
 - 1. Perform a pre-construction survey in accordance with the Scope of Work.
- B. Geotechnical Monitoring:
 - 1. Prior to initiating removal activities, perform pre-construction structural monitoring and install geotechnical monitoring devices in accordance with the Scope of Work and 31 09 13 – Geotechnical Instrumentation and Monitoring.
- C. Debris Removal:
 - 1. Where known, the approximate locations of obstructions/debris are shown on the Design Drawings, however, the Remediation Contractor should anticipate additional obstructions/debris that have not been identified or shown.
 - 2. Conduct debris demolition and removal in accordance with the Scope of Work.
 - 3. Manage, transport and recycle or dispose debris in accordance with the Scope of Work.
- D. Test Pits:
 - 1. In advance of the construction, excavate, make observations and measurements, and fill test pits to determine conditions or location of existing structures and Underground Facilities. Perform all work required in connection with excavating, stockpiling, maintaining, shoring, and filling test pits.
 - 2. Remediation Contractor shall be responsible for the definite location of each existing above and underground structures involved within the areas of excavation.
 - 3. Payment for Test Pits: There shall be no separate payment for test pits.
- E. Use of Explosives: Use of explosives is prohibited.

3.04 DEWATERING

- A. General:
 - 1. Provide and maintain adequate drainage and dewatering equipment to remove, temporarily store, and dispose of all surface water and groundwater entering excavations, or other parts of the Work and work areas.
 - 2. Keep all working areas at the site free of surface water at all times.
 - 3. Provide temporary drainage ditches, diversion berms, dikes, temporary pumping, and other work necessary for diverting or removing rainfall and all other accumulations of surface water from excavation areas and any other onsite locations.
 - 4. Maintain the condition of piping, conduits, and channels used for drainage. Piping, conduits, and channels shall be clean and free of sediment.
 - 5. Promptly repair damages to adjacent facilities caused by dewatering operations.
 - 6. Remediation Contractor shall not be entitled to relief from the compaction requirements due to insufficient or ineffectual dewatering.
- B. Temporary Dewatering System Design:
 - 1. Methodology of dewatering shall be determined by the Remediation Contractor and approved by the Remediation Engineer.
 - 2. Design, provide, operate, and maintain the dewatering system. Include trenches, sumps, pumps, hose, piping, well points, and similar facilities, necessary to depress and maintain groundwater level below the base of each excavation until backfilling operations are completed and acceptable to the Remediation Engineer.

3. Design and operate dewatering system to avoid settlement and damage to existing structures and Facilities, and to minimize the turbidity of the collected water.
 4. Locate elements of temporary dewatering system to allow continuous dewatering operation without interfering with the Work to the extent practicable.
 5. All removed water shall be contained in onsite frac tank(s) equipped with valving and piping as needed to perform the following:
 - a. Receive extracted groundwater, precipitation, and other liquids generated during the work.
 - b. Transfer the collected water to the water treatment facility, offsite treatment facility, or other location approved by the Remediation Engineer and NYSEG
 6. Provide portable, pre-fabricated spill containment berms for the frac tank(s).
- C. Temporary Dewatering System Installation:
1. A driller licensed in the State of New York may be required if the Remediation Contractor elects to utilize well points for dewatering.
 2. To assess the performance of the temporary dewatering system, the Remediation Contractor shall conduct initial system start-up activities. These activities are intended to demonstrate and troubleshoot, as necessary, system operations, and to provide planning-level information regarding subsequent operations related to extraction rates/timing and other related operations. Start-up testing shall occur once the excavation support systems have been installed and once the extraction and treatment system components have been installed and individually tested, as appropriate. The results of the extraction system start-up activities may provide additional information related to extraction rates and timing.
- D. Temporary Dewatering System Operation:
1. Before excavation below ground-water level, place system into operation to lower water to specified levels and then operate it continuously until fill materials have been placed or until dewatering is no longer required by the Remediation Engineer.
 2. If, in Remediation Engineer's opinion, groundwater levels are not being lowered or maintained as required, provide additional or alternate temporary dewatering devices, as necessary, at no additional cost to NYSEG.
 3. Schedule and execute all excavation and backfill activities to minimize the volume of potentially contaminated water generated.
 4. Remove water from excavations as fast as water collects and store in onsite frac tank(s).
 5. Remediation Contractor is responsible for the security, fueling, and monitoring of the dewatering system during the Work. Normal engine, pump and system maintenance, as may be required, is also the responsibility of the Remediation Contractor.
 6. Remove dewatering system from site upon completion of dewatering. Properly abandon dewatering points in accordance with the local, state, and federal regulations.
 7. The maximum allowable pumping rate to the treatment facility is 100 gallons per minute.

3.05 EXCAVATION

- A. Provide safe and adequate vehicle/equipment access to and egress from the excavations. Adhere to the access restrictions specified in the Contract Documents relating to excavation support structures. Do not drive, load, or store any equipment or materials within such restricted areas.
- B. Discuss and obtain approval from the Remediation Engineer and NYSEG for any modifications in the excavation limits from those presented in the Contract Drawings.
- C. Survey and document the final horizontal and vertical limits of the excavation in accordance with the Contract Documents.

- D. The Remediation Contractor shall perform all excavation required to complete the Work as shown, specified, and required. Excavation shall include removing and handling of earth, sand, clay, gravel, hardpan, pavements, rubbish, and other materials within the work area.
- E. Excavation protection: Provide excavation protection systems in accordance with Federal and State Laws and Regulations to prevent injury to persons and property, including surface structures and utilities.
 - 1. Excavation less than four feet deep: Unless indicated otherwise on the Design Drawings, excavations in soil conditions where there is no potential for a cave-in may be made with vertical sides.
 - 2. Excavations greater than four feet deep: Excavations shall be sloped and benched, shielded, shored, or braced, where indicated on the Design Drawings. The design, construction, shoring and/or bracing, and all related costs shall be the responsibility of the Remediation Contractor.
 - 3. Provide and maintain excavation support and protection systems in accordance with Section 31 50 00 – Excavation Support and Protection.

3.06 SOIL HANDLING

- A. Clean Overburden Material:
 - 1. Clean, excavated, overburden soils, as determined by the Remediation Engineer, shall be stockpiled in the area designated for staging shown on the Design Drawings, or as otherwise directed by the Remediation Engineer.
 - 2. The Remediation Engineer shall collect samples from the stockpiled overburden for laboratory analysis (by others).
 - 3. Disposal or reuse of overburden shall be determined by Remediation Engineer.
- B. Impacted Excavated Materials:
 - 1. Product-impacted soils shall be direct loaded, transported offsite, and disposed of at an approved facility.
 - 2. Handling and disposal of excavation waste shall be in accordance with Laws and Regulations and with Section 02 61 13 - Excavation and Handling of Contaminated Material.
- C. Stockpiled Soil:
 - 1. Stockpiles shall be covered with tarps or an equivalent at the end of each workday to control vapors, odors and dust during non-working hours. Tarps and/or sheeting used to cover the excavation must be securely fastened to the ground with sandbags, stakes, or equivalent method.
 - 2. The staging areas shall be cleared of all debris, resulting in a relatively-level surface with positive drainage away from the stockpiled area established and maintained.
- D. Unauthorized Excavation: All excavations outside the lines and grades shown or indicated and that are not approved by Remediation Engineer, together with removing and disposing of the excavated material and backfilling with suitable material, shall be at Remediation Contractor's expense. Fill unauthorized excavations with properly-compacted general fill material at Remediation Contractor's expense.

3.07 SUBGRADE PREPARATION

- A. Subgrades shall be firm and intact, dense, and thoroughly compacted and consolidated; shall be free of standing water and mud, muck, and other soft or unsuitable materials; and shall remain firm and intact under all construction operations. Subgrades that are otherwise solid but become soft or mucky on top due to construction operations shall be reinforced with general fill material. Finished elevation of stabilized subgrades shall not be above subgrade elevations shown or indicated.
- B. Grade and compact subgrade to an even, firm foundation in accordance with this Section. Remove unsuitable subgrade materials, including soft materials, boulders, vegetation, and loose stones, and replace with compacted fill material as directed by Remediation Engineer.
- C. If, in Remediation Engineer's opinion, subgrade becomes softened or mucky because of construction delays, failure to dewater properly, or other cause within Remediation Contractor's control, the subgrade shall be excavated to firm material, trimmed, and backfilled with compacted general fill material at Remediation Contractor's expense.
- D. Proof-Rolling Subgrades:
 - 1. Prior to placing gravel surfaces, proof-roll the subgrade surface with sufficient proof-rolling apparatus. Before starting proof-rolling, submit to and obtain acceptance from Remediation Engineer of proof-rolling apparatus and procedure to be used.
 - 2. Proof-rolling operations shall be made in the presence of Remediation Engineer. Notify Remediation Engineer at least 24 hours in advance of start of proof-rolling operations.
 - 3. Subgrades displaying pronounced elasticity or deformation, deflection, cracking, or rutting shall be stabilized as directed by Remediation Engineer. Unsuitable materials shall be undercut to the depth directed by Remediation Engineer and replaced with compacted general fill material. Other suitable stabilization methods may be directed by Remediation Engineer.
 - 4. When proof-rolling existing (or native) soils, the layer shall be acceptable when deformations caused by substantial site equipment (e.g., roller, fully loaded dump truck) are no deeper than one inch. All soft or wet materials that continue to deform more than one inch shall be removed and replaced with suitable material and retested at the expense of the Remediation Contractor.

3.08 BACKFILL REQUIREMENTS

- A. Place fill in excavations as promptly as progress of the Work allows, but not until completing the following:
 - 1. Surveying and recording of horizontal and vertical limits of excavation.
 - 2. Inspection, testing, approval, and recording of information indicating that excavation has extended to the top of weathered bedrock.
 - 3. Removal of trash and debris.
- B. Backfill all excavation areas to the grades specified on the Contract Drawings.
- C. Backfill material shall consist of specified materials presented in the Contract Drawings and Specification 31 05 16 – Aggregates for Earthwork.
- D. Groundwater amendment shall be applied at a rate of 5% by weight as identified in the Contract Documents and Specification 31 05 16 – Aggregates for Earthwork. Backfill from proposed final grade to 5 feet below final grade will not be amended with oxygen releasing compound to minimize the impacts to biota within the habitable zone (e.g., increase in pH due to the amendment).

- E. The Remediation Contractor shall place backfill materials in excavations as promptly as anticipated and schedule site Work to accommodate laboratory/field testing of backfill materials and review of test results.
- F. Any settlement occurring in backfilled areas shall be refilled and compacted at the Remediation Contractor's expense.
- G. Do not place fill in a frozen condition or on top of frozen material. No calcium chloride or other chemicals shall be added to the backfill materials to prevent freezing.
- H. Material incorporated in the backfilling operation that is not in satisfactory condition shall be subject to rejection and removal at the Remediation Contractor's expense.
- I. The Remediation Contractor shall place backfill materials as indicated on the design drawings and at the moisture content and density specified in Part 3.10(C) and Table 31 23 00-A of this Section.
 - 1. If the backfill materials are too dry, the Remediation Contractor shall furnish and use equipment capable of adding measured amounts of water to the fill materials to bring backfill materials to a condition within required moisture content range.
 - 2. If the backfill materials are too wet, the Remediation Contractor shall dry the backfill material by aeration and/or stockpile the material for drying.
 - 3. When subgrade or lift of backfill materials requires moisture-conditioning before compaction, backfill material shall be sufficiently mixed or worked on the subgrade to ensure uniform moisture content throughout the lift of material to be compacted.
- J. The Remediation Contractor shall use appropriately sized equipment and methods when placing and compacting backfill over geosynthetics so as not to damage underlying geosynthetic materials. Areas of the geosynthetics that may have been damaged during backfill installation as determined by the Remediation Contractor and/or Remediation Engineer, shall be inspected and repaired, if necessary, in accordance with the Specifications at the Remediation Contractor's expense.

3.09 METHOD OF COMPACTION

- A. General
 - 1. The Remediation Contractor shall adopt compaction methods that produce the degree of compaction specified herein, prevent subsequent settlement, and provide adequate support.
 - 2. Compaction methods used shall avoid disturbance to adjacent utilities and structures.
 - 3. Hydraulic compaction by ponding or jetting shall not be permitted.
 - 4. Backfill materials shall not be left in an uncompacted state at the close of the day's construction, unless otherwise approved by the Remediation Engineer.
 - 5. Prior to terminating work, ridges of soil left on the final layer of compacted fill, by tractors, trucks, or other equipment used for compaction, shall be eliminated using low-pressure equipment.
- B. Equipment

1. The Remediation Contractor shall select and use compaction equipment suitable for the type of fill material placed and capable of providing the minimum density required in the Contract Documents. Equipment used shall be capable of compacting in restricted areas next to structures and around piping and utilities. Effectiveness of the equipment selected by Remediation Contractor shall be tested prior to initiating compaction activities by constructing a small section of backfill within or adjacent to the area where backfill will be placed. Record total number of coverages with selected compaction equipment and perform field moisture content and density tests to ensure that specified compaction of fill has been obtained. If tests on the test section of fill indicate that required compaction has not been obtained, do one or more of the following:
 - a. Increase the amount of coverage.
 - b. Decrease the lift thickness.
 - c. Use different compaction equipment.

C. Compaction Density Requirements:

1. Compaction required for all types of fills shall be in accordance with Table 31 23 00-A of this Section. Moisten material or aerate the material as necessary to provide the moisture content that will facilitate obtaining the required compaction.

TABLE 31 23 00-A: MINIMUM COMPACTION REQUIREMENTS

| Fill Material | Maximum Uncompacted Lift Thickness (inches) | Percent Compaction (ASTM D698) |
|---------------------------------------|--|---|
| General Fill Material | | |
| More Than Four Feet Below Final Grade | 12 | 90 |
| Less Than Four Feet Below Final Grade | 8 | 95 |

2. Fill shall be wetted and thoroughly mixed to achieve optimum moisture content plus-or-minus two percent.
3. Replace natural, undisturbed soils or compacted soil subsequently disturbed or removed by construction operations with materials compacted as indicated in the Table 31 23 00-A of this Section.
4. Field quality control testing for density, to verify that specified density was obtained, shall be performed within the top five feet of the excavation.

D. Crushed Gravel Surfacing - Subbase Course Placement:

1. Unless otherwise shown, placement and compaction of subbase course material shall comply with the requirements of this Section and the following:
 - a. Compaction with roller shall begin at the sides of the area to be paved or receive crushed stone surfacing and shall continue towards the center of the area. Compaction shall continue until there is no movement of the course ahead of the roller.
 - b. After rolling, the Remediation Contractor shall check for grade with a line not less than 40 feet in length. Depressions over ½ inch deep shall be filled and regraded to the satisfaction of the Remediation Engineer.
2. Do not install subbase in excess of 500 feet in length without compacting to prevent softening of the subgrade.
3. If subgrade material becomes churned up into or mixed with the subbase material, remove the mixed material and replace with clean, compacted subbase material.

E. Unacceptable Excavated Materials:

1. In cases where over-excavation to replace unacceptable soil materials is required, the Remediation Contractor shall backfill the over-excavated area to the required subgrade with general fill material and thoroughly compact the backfill in accordance with Table 31 23 00-A of this Section.

3.10 FIELD QUALITY CONTROL

A. Daily Inspections:

1. Perform daily or more frequent inspections of all excavations, adjacent areas, and protective systems as required by Laws and Regulations and this Section to ensure their continued effectiveness and integrity, and the safety of exposed employees.
2. Inspections shall be performed by Remediation Contractor's competent person, together with Remediation Engineer's Resident Project Representative:
 - a. Prior to the start of Work and as needed throughout the day.
 - b. After every rainstorm or other hazard-increasing occurrence.
3. During each inspection, note the condition of each excavation, the adjacent areas, and protective systems, and any evidence of situations that could result in possible cave-ins, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions.
4. Where Remediation Contractor's competent person finds evidence of a situation that could result in a possible cave-in, indications of failure of protective systems, hazardous atmospheres, or other hazardous conditions, exposed employees shall be removed from the hazardous area until the necessary precautions or corrective actions have been taken to ensure their safety.
5. Document the date, time, and outcome of each inspection in a dedicated log. Submit copy of inspection log to the Remediation Engineer and NYSEG with daily construction reports.

B. Site Tests:

1. Perform field moisture content and density tests in accordance with ASTM D6938 to verify that specified compaction of fill materials has been obtained. Comply with the following:
 - a. General Fill Material: Perform one test per 1,000 square feet on every compacted lift less than five feet below finished grade.
2. Submit test results, certified by testing laboratory, to Remediation Engineer within 24 hours of completion of test.
3. If testing laboratory reports or inspections indicate fill compaction below specified density, Remediation Contractor shall remove unacceptable materials as necessary and replace with specified materials and provide additional compaction at Remediation Contractor's expense until subgrades, bedding, and fills are acceptable. Costs for retesting of subgrade, bedding, or fills that did not originally comply with specified density shall be paid by Remediation Contractor.
4. The Remediation Engineer may order additional in-place density tests to ascertain conformance with the compaction requirements shown in Table 31 23 00-A of this Section.

3.11 GRADING

- A. Following completion of all backfill operations, the Remediation Contractor shall grade the site to the lines, grades, and elevations shown on the Design Drawings, taking into account any subsequent site restoration requirements.

3.12 OTHER REQUIREMENTS

A. Unfinished Work

1. When, for any reason, the Work is to be left unfinished, all trenches and excavations shall be filled and all roadways and watercourses left unobstructed with their surfaces in a safe and satisfactory condition.
2. Temporary barriers shall be installed around all excavations and excavation work areas in accordance with this Section.

END OF SECTION

SECTION 31 50 00

EXCAVATION SUPPORT AND PROTECTION

PART 1 – GENERAL

1.01 DESCRIPTION

A. Scope:

1. Furnishing, installing, monitoring, and maintaining excavation support and protection systems (shoring) capable of resisting soil, hydrostatic pressures, and superimposed and construction loads.
 - a. Installing, maintaining, and removing shoring systems without damaging the electric substation, existing structures, utilities, and other areas indicated as to be protected.
 - b. Minimizing groundwater from entering excavation by pre-trenching the shoring alignment and mixing materials (i.e., existing soil, bentonite and cement) to create a hydraulic barrier wall.
2. Providing all labor, materials, equipment, surveys and services necessary for or incidental to the following:
 - a. Pre-trenching and installing a hydraulic barrier wall along the shoring alignment.
 - b. Furnishing shoring system components including, but not limited to, soldier piles embedded into bedrock and steel plate or timber lagging.
 - c. Minimizing water seepage through the excavation support system.
 - d. Dewatering the excavation and temporary containing collected water.
 - e. Cutting off piles embedded into bedrock 4 feet below final ground surface elevation.
 - f. Removing and decontaminating/cleaning shoring components, excluding piles embedded into bedrock.
 - g. Use of trench shields to remove portions of the hydraulic barrier wall after backfilling.
3. This specification establishes the NYSEG and the Remediation Engineer's expectations regarding the excavation support system installation, including the level of effort to be put forth by the Remediation Contractor concerning the installation activities. Field conditions may limit the effectiveness of standard installation equipment; therefore, the Remediation Contractor will be required to implement pre-trenching measures or a Remediation Engineer-approved alternative identified by the Remediation Contractor.
4. Thoroughly review the excavation area configuration and the available information concerning subsurface conditions. From this review, the Remediation Engineer anticipates that the Remediation Contractor will understand the scope of the excavation support system installation and the nature of the subsurface conditions that may be encountered during installation.
5. Providing the materials, equipment, and level and experience of labor necessary to install the excavation support systems consistent with the remedial design.

B. Related Sections:

1. Section 01 35 29 – Remediation Contractor's Health and Safety Plan
2. Section 01 71 23 – Field Engineering
3. Section 31 05 16 – Aggregates for Earthwork
4. Section 31 09 13 – Geotechnical Instrumentation and Monitoring
5. Section 31 23 00 – Excavation and Fill

1.02 APPLICABLE CODES, STANDARDS, AND SPECIFICATIONS

A. American Society for Testing and Materials (ASTM).

1. ASTM A36/A36M – Specification for Carbon Structural Steel.

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2. ASTM A6/A6M – Specification for General Requirements for Rolled Structural Steel Bars, Plates, Shapes, and Sheet Piling.
 3. ASTM A992/992M – Standard Specification for Structural Steel Shapes
 4. D 1633 – Standard Test Method for Unconfined Compressive Strength of Molded Soil – Cement Cylinders.
 5. D 5084 – Measurement of Hydraulic Conductivity of Saturated Porous Materials using a Flexible Wall Permeameter.
 6. D 4832 – Preparations and Testing of Controlled Low Strength Material Test Cylinders.
 7. C 150 – Standard Specification for Portland Cement.
- B. American Institute of Steel Construction (AISC).
1. AISC 325, Steel Construction Manual

1.03 QUALIFICATIONS

- A. The Remediation Contractor's Project Manager/Superintendent must demonstrate a minimum of five years of relevant experience with in-situ mixed slurry wall (hydraulic barrier wall) work and must have a minimum of two years of experience as a Project Manager/Superintendent.
- B. The Remediation Contractor (or subcontractor) personnel performing the work shall have at least three years' experience in the construction of hydraulic barrier walls using bentonite and Portland Cement as additives.
- C. The Remediation Contractor's other key personnel must demonstrate a minimum of two years of experience with hydraulic barrier wall projects of similar scope and size. Other key personnel include technical staff and equipment and mixing plant operators involved with the in-situ solidification (ISS) activities.
- D. Drilling operators and foreman shall have a minimum of three years' experience installing steel soldier piling into rock.

1.04 SUBMITTALS

- A. Qualifications: submit the following qualifications prior to mobilization.
 1. Provide evidence/summaries of qualifications required under Article 1.03.
 2. Number of years continuously engaged in soldier pile installation and summaries of representative Project experience.
 3. Resumes for key Remediation Contractor/subcontractor personnel, including project manager, onsite superintendent/foreman, onsite health and safety officer, and equipment operators.
- B. *Hydraulic Barrier Wall Installation Plan*: Submit the following required information at least 10 days prior to hydraulic barrier wall installation activities:
 1. Detailed description of hydraulic barrier wall equipment and layout, equipment failure replacement/repair procedures and estimated related downtimes.
 2. Detailed description of hydraulic barrier wall construction sequence, procedures to account for subsidence during the settling and curing process, and methods to connect previous day's hydraulic barrier wall installation with new installation.
 3. Detailed description of hydraulic barrier wall installation process, including methods for managing excess swell and waste material handling procedures.
 4. Proposed methods and equipment to pre-trench the wall alignment.
 5. Material specifications, including the grout mixture.

6. Detailed description and procedures for preparing hydraulic barrier wall mixtures and specific application methods to ensure proper in-situ proportions and sequencing.
 7. Equipment and procedures used to maintain the stability of existing site features during hydraulic barrier wall construction.
 8. Procedures for the removal of subsurface obstructions (if encountered).
 9. Equipment and procedures used for tracking hydraulic barrier wall construction progress and verifying installation location/depths. Remediation Contractor shall use real-time kinematic Global Positioning System (RTK-GPS) trackers or approved alternate to verify weathered bedrock depth.
 10. Equipment cleaning/decontamination procedures.
- C. *Shoring Installation Plan*: Submit a *Shoring Installation Plan* at least 10 days prior to shoring installation that describes the anticipated approach for installing the steel soldier piles to the design configuration, if no significant installation difficulties are encountered. The plan shall include:
1. Proposed procedures for storing, handling, preparing, drilling, installing, and cutting piles in accordance with this Section.
 2. List of equipment anticipated to be used for the installation/removal of the soldier piling.
 3. Certification that each large diameter auger drill delivered to the site is suitable for the anticipated drilling conditions, such as drilling through bedrock.
 4. Proposed methods for verifying drill depth prior to soldier pile installation.
 5. Specifications for specific equipment makes/models to be utilized.
 6. Proposed cement mix for backfilling drilled holes to the top of weathered bedrock.
 7. Proposed grout mix for backfilling holes from weathered bedrock to ground surface.
 8. Proposed lagging materials and installation procedures and equipment.
 9. List of significant project constraints or conditions that could result in design deviations and contingencies to ensure piles can be installed to design depths.
- D. Soldier piles and lagging: Submit the following prior to mobilizing soldier piles and lagging.
1. Mill test documentation for piling to be used on Project.
 2. Manufacturer's data indicating the structural properties of the piling and lagging section(s) to be used, including moment of inertia (I), section modulus (S), thickness, and width/depth dimensions.
- E. Trench Shield Design:
1. Submit calculations and assumptions for construction surcharges, including magnitude and location relative to excavations, prepared and stamped by the manufacturer's professional engineer certified in the state of New York not less than 10 days prior to beginning removal of hydraulic barrier wall portions.
 2. Shop drawings shall show the proposed trench shield system and details not less than 10 days prior to beginning work.
 3. Remediation Engineer's review and acceptance of submittal does not imply approval by Remediation Engineer of the associated Work. Remediation Contractor shall be solely responsible for designing, installing, operating, and maintaining the system(s) required to satisfactorily perform excavation protection.
- F. Hydraulic barrier wall construction submittals: Within two days of installation, provide a daily submittal including the following information:
1. Grout batch calculations.
 2. Total square feet and lineal feet of hydraulic barrier wall completed, daily square feet and lineal feet of hydraulic barrier wall, and an updated map identifying and depicting completed hydraulic barrier wall.
 3. RTK-GPS results: weathered bedrock and grout installation elevations.
 4. Documentation of any unforeseen site conditions.

5. Documentation of modifications or deviations from the approved *Hydraulic Barrier Wall Installation Plan*, or this Section.
- G. Shoring construction submittals: within two days of installation, submit copies of installation records for each soldier pile, including the following information:
 1. Project name, Contract number, report date, and date of pile installation.
 2. Contractor and Subcontractor names.
 3. Pile location and number.
 4. Pile section designation.
 5. Total length of pile.
 6. Starting and finishing drilling times.
 7. Pile tip and butt elevations and total length of installed pile.
 8. Ground surface, weathered bedrock, and competent bedrock elevations.
 9. Description of unusual occurrences or obstructions, if any, during drilling.

1.05 HYDRAULIC BARRIER WALL GROUT MIX DESIGN

- A. Provide grout mix materials (i.e., specified reagents and water) in sufficient quantities to allow for uninterrupted slurry wall activities and the production rate as determined by the Remediation Contractor.
- B. Calculate and provide in an acceptable format, the following Hydraulic Barrier Wall grout mix parameters:
 1. The volume of soil being treated in each hydraulic barrier wall area cell, including the volume of treated soil as a result of overlap from adjacent areas.
 2. Based on an approximate average dry density of 81 pounds per cubic foot (pcf), and an average moisture content of 25% show the calculation that indicates the weight of soil being treated in each hydraulic barrier wall area
 - a. The following percentages of solidified mixture components are relative to the total calculated dry weight of the treated mass:
 - b. Portland Cement (PC) at 2 percent.
 - c. Bentonite at 5 percent.
 3. Add to the baseline composite grout mixture a 1:1 water to binder ratio. In-situ field conditions may warrant a change in grout mix water content based on change in in-situ moisture content. If this is the case, submit a request to the Remediation Engineer for approval to alter the grout mixture water quantities.

1.06 HYDRAULIC BARRIER WALL PERFORMANCE CRITERIA

- A. Verify that the hydraulic barrier wall matrix meets the specified performance standards, including, but not limited to, the following:
 1. The average hydraulic conductivity (permeability) must be less than or equal to 9.99×10^{-7} centimeters per second (cm/sec), with no more than 20% of the performance samples shall be greater than 9.99×10^{-7} cm/sec and no samples shall have a hydraulic conductivity value greater than 9.99×10^{-6} cm/sec.
 2. Unconfined compressive strength (UCS) of the treated soil matrix must be greater than 5 pounds per square inch (psi) but less than 30 psi after 7 days.
- B. In situ mixing shall cover the entire hydraulic barrier wall area and shall extend to the top of weathered bedrock/bottom of excavation as depicted on the Design Drawings. The Remediation Contractor must provide sufficient overlap between mixed areas such that no soil within the established barrier wall limits is not sufficiently mixed.

- C. If refusal is encountered prior to achieving the target anticipated depths, notify the Remediation Engineer immediately. Upon notification, the Remediation Engineer may request the Remediation Contractor to remove the obstruction.
- D. Homogenize additives (e.g., bentonite, cement) and the existing soil throughout the hydraulic barrier wall alignment.
- E. Collect verification hydraulic barrier wall samples at a frequency of one set for every 100 lineal feet of wall and test the samples for permeability and compressive strength (ASTM D5084 and D1633, respectively). Each set of samples shall consist of two 3-inch by 6-inch sample specimens (cylinders) of homogenized soils obtained from the barrier wall surface, mid-point, and other depths to be determined with the Remediation Engineer.
- F. Conduct hydraulic barrier wall construction activities in a manner that minimizes potential swell and the quantity of flowable material at the ground surface.

1.07 COORDINATION

- A. The Remediation Engineer will be onsite during all hydraulic barrier wall construction operations to observe and document the overall barrier wall construction operation. Notify the Remediation Engineer a minimum of two weeks prior to the start of hydraulic barrier wall construction activities.
- B. Notify the Remediation Engineer at least five days prior to beginning shoring installation operations at any location.
- C. Notification shall not relieve the Remediation Contractor of its responsibilities for performing the work in accordance with the Remedial Design. Prior to notification, the Remediation Contractor shall ensure that all required submittals have been submitted to the Engineer and returned by the Engineer as "Reviewed" or "Reviewed and Noted".

1.08 PROJECT CONDITIONS

- A. Employ a qualified land surveyor and establish exact elevations, northing and easting coordinates at fixed points (as shown in the Design Drawings) to act as control points as described in Specification Section 01 71 23 – Field Engineering. Clearly identify benchmarks and record existing elevations.
 - 1. During installation of excavation support and protection systems, regularly resurvey benchmarks, and maintain an accurate log of surveyed elevations and positions for comparison with original elevations and positions. Promptly notify Remediation Engineer if changes in elevations or positions occur or if cracks, sags, or other damage is evident in adjacent construction.
 - 2. Prior to advancing soldier pile in certain areas, the remnants, or intact elements of below ground structures may require demolition and removal to facilitate installation. Following discussions with NYSEG and Remediation Engineer regarding the presence of such features, the Remediation Contractor shall conduct these activities to facilitate soldier pile installation and achieve the removal limits specified in the Design Drawings.

PART 2 – PRODUCTS

2.01 MATERIALS AND EQUIPMENT

- A. Steel Soldier Piles: All steel materials shall be new and undamaged, unless otherwise directed by NYSEG, and shall conform to pertinent AISC, ANSI, ASTM or other industry standards. Unless specified otherwise in other specification sections, all materials and fabricated metal items shall conform to the following minimum requirements:
1. Steel Soldier Piles
W or H shaped beams ASTM A992/A992M (Grade 50)
- B. Lagging shall consist of the following:
1. Steel Plate Lagging (ASTM A36 / A36M) as indicated on the drawings; or
 2. Timber lagging:
 - a. Southern Yellow Pine No. 1 Dense wood that is full cut, not dressed, and kiln dried;
 - b. 5" thick (min) for pile spacings of 10 feet. Lagging shall be 3" thick (min) for all other soldier pile; or
 3. Approved equal.
- C. Hydraulic Barrier Wall Mix Design: hydraulic barrier wall shall consist of cement, bentonite, native soil and water as outlined below:
1. The mix shall be proportioned to be self-leveling and shall not require compaction
 2. The mix shall have a low strength to allow it to be drilled.
- D. Hydraulic Barrier Wall Grout Mixture
1. PC shall be Type I/II.
 2. Bentonite Clay (if needed) shall be Wyo-Ben HydroJel 90 and designated as API 13A, 90 barrels per ton (bbl/ton) (or approved equal). Bentonite used in preparing the grout shall be pulverized (powder or granular) premium grade sodium cation montmorillonite and must meet the most current API Standard 13A, Section 9, 2004 Edition and shall require a manufacturer's certificate of compliance.
 3. Provide a means for accurate measurement and documentation verifying the required grout material quantities are maintained, as specified.
 4. Maintain sufficient reagent material on site to achieve a maximum production rate for a minimum of 3 days. The Remediation Contractor is responsible for the coordination of an appropriate material delivery schedule to accommodate this indicated stock requirement.
- E. Hydraulic Barrier Wall Grout Mixture Water
1. Provide onsite potable water for grout mixing by the Remediation Contractor. Arrange for and obtain appropriate permits for the use of hydrant water or temporary hook up of site potable water. The Remediation Contractor shall be responsible for all fees associated with water usage. If an offsite source of water is utilized other than city-provided water, the Remediation Contractor must submit documentation of the source of water for Remediation Engineer review.
 2. Provide a means for accurate measurement and documentation of water quantities utilized for grout batch mixtures. The water measurement devices must be capable of measuring totalized and instantaneous flows. Measuring devices must be calibrated to within +/-2 percent to accurately measure the required quantity of water necessary for each grout batch mixture. Provide documentation for equipment calibration and calibration schedule.
 3. If water for hydraulic barrier wall mixing activities is stored on site, the water storage containers/tanks must be clean and free of any waste residuals or debris.

2.02 GENERAL REQUIREMENTS

- A. Except as otherwise specifically noted in the Contract Documents, or specified herein, all materials and work for structural steel and miscellaneous metal work shall be in conformance with applicable provisions of the latest edition of the *AISC Steel Construction Manual*.
- B. Shop Fabrication
 - 1. Structural steel and miscellaneous metal shall be fabricated in conformance with dimensions, arrangement, sizes, and weights or thicknesses shown or stipulated in the Contract Documents.
 - 2. All members and parts, as delivered and erected, shall be free of winds, warps, local deformations, or unauthorized bends. Holes and other provisions for field connections shall be accurate and shop checked, so that proper fit will result when the units are assembled in the field.
- C. Steel plate lagging and miscellaneous metal shall be stored on blocking so that no metal touches the ground and water cannot collect thereon.

PART 3 – EXECUTION

3.01 PREPARATION

- A. Protect the electric station, structures, utilities, sidewalks, pavements, and other facilities from damage caused by settlement, lateral movement, undermining, washout, dewatering, and other hazards that could develop during the Work.
- B. Monitor excavation support and protection systems daily during excavation progress and for as long as excavation remains open. Promptly correct bulges, breakage, or leaks, to ensure that excavation remains stable and free of standing water.
- C. Damages to adjacent facilities caused by installing excavation support and protection systems shall be promptly repaired at the Remediation Contractor's expense.
- D. Determine soldier piling layout and grade by survey and establish necessary lengths as presented in the Contract Documents.

3.02 INSTALLATION OF HYDRAULIC BARRIER WALL

- A. Hydraulic Barrier Wall Grout Production:
 - 1. The Hydraulic Barrier Wall Grout shall be mixed at a stationary mixing plant which is either a continuous or a batch type plant. A batch is defined as the amount of material that can be mixed at one time. The Remediation Contractor shall design the mix of materials to accurate proportions, either by volume or by weight, so that when the materials are incorporated in the mix a thorough and uniform mix will result.
 - 2. If the Hydraulic Barrier Wall Grout can be placed within 30 minutes of the end of mixing, then open haul units may be used for transport. If it cannot be placed within 30 minutes after the end of mixing, it must be transported by a rotating drum unit capable of 2-6 rpm.
- B. Hydraulic Barrier Wall Placement
 - 1. Use suitable earth-moving equipment (i.e. backhoe, excavator, or combination thereof) to excavation/mix the Hydraulic Barrier Wall so that the required width trench can be carried to its final depth of cut continuously along the trench line.

2. Special chopping, chiseling or other suitable equipment may be used as necessary to satisfactorily accomplish the required excavation. The width of the excavating tool shall be equal to or greater than the specified width of the barrier wall.
3. Prior to mixing, pre-trench the entire length of the hydraulic barrier wall alignment to approximately 4 feet below the existing ground surface to remove known obstructions, facilitate abandonment of inactive Manufactured Gas Plant (MGP) structures, and to account for swelling and management of the solidified material.
4. Grout shall be introduced into the trench following pre-trenching and shall be maintained in the trench during excavation.
5. The Remediation Contractor shall maintain the stability of the excavated trench.
6. The level of Hydraulic Barrier Wall shall not be permitted to drop more than 1 feet below the surface of the slurry trench working platform except as approved by the Remediation Engineer. The Remediation Contractor shall have personnel, equipment and materials ready to raise the grout level at any time.
7. Do not place barrier wall grout that is frozen, or place barrier wall grout on frozen ground.
8. Do not expose barrier wall mixture to freezing temperatures until after it has gained its requisite strength.
9. Adjacent sections of the Hydraulic Barrier Wall shall be connected within 48 hours.

C. Real Time Kinematic GPS

1. Install and maintain RTK-GPS trackers on equipment used for hydraulic barrier installation for monitoring and recording excavation/weathered bedrock locations and elevations within the shoring alignment.

3.03 INSTALLATION (STEEL SOLDIER PILES)

- A. Soldier piles shall be drilled into place. Large diameter augers shall be used in the Hydraulic Barrier Wall materials while double walled core barrels or full-faced rotary tools shall be used for drilling into rock.
- B. Soldier piling shall be constructed so as to keep the core holes free from earth or surface water runoff (into the core holes).
- C. The Remediation Contractor shall remove any material that stops drilling prior to continuation of drilling, or develop an alternative methodology, reviewed by the Remediation Engineer, for completing soldier pile system installation.
- D. Temporary casings shall be used to stabilize the drilled shaft excavations and then removed after or during placement of rock-socket concrete and/or drilled shaft CLSM around soldier piles as specified in Section 31 05 16 – Aggregates for Earthwork.
- E. Set Up Soldier Piles
 1. Drill piles with equipment suitable for the conditions encountered. Suitable procedures must be employed to prevent damage to pile tops and tips.
 2. Plumb steel soldier piling within four percent of pile length.
 3. Monitor, prevent, and correct any tendency of soldier piles to bend, twist or rotate.
 4. Piles damaged or drilled outside the above tolerances shall be replaced. Any soldier pile damaged during installation shall be immediately pulled and replaced.
 5. Splicing is not permitted.

3.04 RECORDS

- A. Provide accurate records of each soldier pile installed per Article 1.04.F of this Section.

- B. Mark identification number clearly visible on each soldier pile with a waterproof marking device, within two feet of the top, before drilling is initiated.
- C. Spray paint all soldier piles rejected from the work for any reason, at the time of rejection, with the letter "X" within three feet of both ends.

3.05 TRENCH SHIELD

- A. All components of the trench shield, as delivered and erected, shall be free of winds, warps, local deformations, or unauthorized bends. Holes and other provisions for field connections shall be accurate, so that proper fit will result when the trench shield components are assembled in the field.
- B. Before assembly, surfaces to be in contact with each other shall be thoroughly cleaned. All parts shall be assembled as shown on the Remediation Contractor's Shop Drawings.
- C. Trench shield systems shall be visually inspected daily during excavation progress and for as long as excavation remains open. Promptly correct bulges, breakage, or leaks, to ensure that excavation remains stable.
- D. If trench shield system components are rejected from the work because of deviation from location, excessive bending, twisting, or other reasons, the Remediation Contractor shall take suitable corrective action at no additional cost to the Remediation Engineer or NYSEG.
- E. Corrective action shall be reviewed by the Remediation Engineer. Suitable action includes extracting, furnishing, and installing of replacement components, so that all components installed meet the requirements of this Section.
- F. Voids left after removal of the trench shield system shall be filled with subgrade soil.
- G. No trench shield components shall remain in the excavation.
- H. Following use and extraction of a trench shield component, the Remediation Contractor shall clean/decontaminate each component prior to any re-use in the removal area. The component shall also be inspected for any damage that may have occurred through installation and/or extraction.

3.06 REJECTION

- A. If excavation system components are rejected from the work because of deviation from location, plumbness requirement, excessive bending, twisting, failed load test or other reasons, the Remediation Contractor shall take suitable corrective action at no additional cost to NYSEG. The corrective action shall be reviewed by the Remediation Engineer. Suitable action includes extracting, furnishing, and drilling of replacement soldier piles so that all soldier piles installed meet the requirements of this Section.

3.07 EXCAVATION SUPPORT SYSTEM EXTRACTION

- A. Remove excavation support and protection systems when approved by the Remediation Engineer and when construction has progressed sufficiently to support excavation and bear soil and hydrostatic pressures. Remove in stages to avoid disturbing underlying soils or damaging structures, pavements, facilities, and utilities; repair the above items as needed.

- B. After backfilling to 4 feet below final ground surface elevation, cut-off soldier piles embedded into bedrock 4 feet below final ground surface elevation.
- C. After backfilling has progressed to final grades, excavate four (4) 10-foot-long sections of the hydraulic barrier wall using trench shields or approved alternative. The hydraulic barrier shall be excavated 10 feet below final grades at the locations indicated on the design drawings.
- D. Following extraction, the Remediation Contractor shall clean/decontaminate shoring components.

END OF SECTION

SECTION 32 90 00

PLANTING

PART 1 – GENERAL

1.01 DESCRIPTION

- A. Scope:
 - 1. Providing all labor, materials, tools, equipment, and incidentals as shown, specified and required to prepare, subgrade, and furnish and install topsoil, fertilizer, seed, mulch, plant materials, and erosion control fabric as described below and as shown on the Design Drawings.
 - 2. Maintaining restoration areas as required until final acceptance by the Remediation Engineer.
- B. Related Sections:
 - 1. Section 01 57 00 - Temporary Controls
 - 2. Section 31 05 16 - Aggregates for Earthwork
- C. References:
 - 1. New York State Department of Transportation (NYSDOT), Standard Specifications for Construction and Materials, September 2016.
 - 2. New York State Department of Environmental Conservation (NYSDEC), New York State Standards and Specifications for Erosion and Sediment Control (Blue Book), November 2016.

1.02 REFERENCES:

- A. American Society for Testing and Materials (ASTM)
 - 1. D422 – Standard Test Method for Particle-Size Analysis of Soils.
 - 2. D2974 – Standard Test Methods for Moisture, Ash, and Organic Matter of Peat and Other Organic Soils.
 - 3. D4972 – Standard Test Method for pH of Soils.

1.03 SUBMITTALS:

- A. Submit the following information to the Remediation Engineer for review at least three weeks prior to delivery of the material to the site.
 - 1. Topsoil information, including supplier name, source address, copy of NYSDEC mining permit, proof of NYSDOT approval, and results of physical testing. Refer to Section 31 05 16 - Aggregates for Earthwork for physical testing requirements.
 - 2. Submit analytical results for the proposed topsoil material. Refer to Section 31 05 16 - Aggregates for Earthwork for laboratory and analytical testing requirements.
 - 3. Lime
 - a. Name of supplier;
 - b. Method of application; and
 - c. Application rate.
 - 4. Fertilizer information, including:
 - a. Name of supplier;
 - b. Percent nitrogen, phosphorous, and potassium;
 - c. Method of application; and
 - d. Application rate.

5. Seed information, including:
 - a. Certificates from seed vendors for each seed mixture or type of seed required. The certificates shall include the following:
 - 1) Name and address of supplier;
 - 2) The botanical name and common name;
 - 3) Date of production;
 - 4) Date of packaging;
 - 5) Percentage of seeds by weight in a mixture;
 - 6) Purity of the seed;
 - 7) Germination percentage; and
 - 8) Amount of undesirable plant seeds present in the mixture.
6. Description of hydroseeding equipment (as applicable), materials to be used, and type and quantity of tackifier to be used.
7. Erosion control fabric data as identified in Section 01 57 00 - Temporary Controls.

PART 2 – PRODUCTS

2.01 MATERIALS

- A. Topsoil shall meet the specifications provided in Section 31 05 16 - Aggregates for Earthwork.
- B. Fertilizer shall be a standard quality commercial carrier of available plant food elements. Fertilize per soil test. If soil is not tested, use a complete, prepared, and packaged material containing a minimum of 5 percent nitrogen, 5 percent phosphorous, and 10 percent potassium.
 1. Each bag of fertilizer shall bear the Manufacturer's guaranteed statement of analysis.
- C. Seed mixtures shall be of commercial stock of the current season's crop and shall be delivered in unopened containers bearing the guarantee analysis of the mix. Seeds in damaged packaging are not acceptable.
 1. All seed shall meet the state and federal standards of germination and purity.
 2. Label seed containers with the following information: analysis of seed mixture, year of production, net weight, date when tagged and location, name and address of distributor.
 3. The seed mixture shall consist of creeping red fescue, perennial ryegrass and fine fescue or 100 percent creeping red fescue.
- D. Mulch shall be stalks of oats, wheat, rye, or other approved crops free from noxious weeds. Mulch shall meet the state standards for quality.
- E. Erosion Control
 1. Erosion control material shall consist of the following:
 - a. Erosion-Control Fiber Mesh: For slopes <3H:1V, 100% Biodegradable twisted jute or spun-coir mesh, a minimum of 0.92 pounds per square yard, with 50 to 65 percent open area. Include manufacturer's recommended 6-inches long steel wire staples.
 - Erosion Control Blanket: For slopes >3:1, North American Green BioNet C125BN or approved equal, installed in accordance with manufacturer's recommendations.

PART 3 – EXECUTION

3.01 TOPSOIL

- A. The area to receive topsoil shall be graded to a depth of not less than 6 inches or as specified, below the proposed finished surface.
 - 1. Remove all debris and inorganic material and loosen the surface material for a depth of 3 inches prior to the placing the topsoil.
 - 2. Do not place topsoil until the subgrade is in suitable condition and free of excessive moisture and frost.
 - 3. Conform the finished surface to the lines and grades of the area before disturbed or as shown on the Design Drawings. Roughen slopes steeper than 3:1. Correct any irregularities before the placement of fertilizer and seed.

3.02 FERTILIZER

- A. Uniformly apply fertilizer to the seed areas at a rate of 850 lbs/acre or per soil test results.
 - 1. Scarify the topsoil to a depth of at least 2 inches with a disc or rake following fertilizer application and prior to application of the seed.
 - 2. Do not apply fertilizer between December 1 and April 1, unless otherwise approved by the Remediation Engineer.

3.03 SEED AND MULCH

- A. Fine grade the topsoil surface in all areas to achieve a uniform surface grade prior to seeding.
- B. Rake restoration areas not receiving topsoil to remove surface debris and any dead vegetation. The Remediation Engineer shall review areas prior to seeding.
- C. Uniformly apply the seed mixture over the prepared surface as follows:
 - 1. With a mechanical spreader apply:
 - a. Creeping red fescue at a rate of 100 pounds of pure live seed (PLS) per acre when in a mix and 175 pounds of PLS if used alone.
 - b. Perennial ryegrass at a rate of 30 pounds of PLS per acre.
 - c. Fine fescue at a rate of 20 pounds of PLS per acre. If used alone, creeping red
 - 2. Lightly rake the seed into the surface and roll with a light hand lawn roller to incorporate seed into the uppermost inch of the topsoil.
 - 3. Do not apply seed when wind conditions are such that materials would be carried beyond designated areas, materials would not be uniformly applied, or if wind velocity exceeds 5 mph.
 - 4. Do not conduct seeding on days with heavy precipitation that will result in the washing of seed into a body of water where they will not survive.
- D. Hand or machine spread the mulch at a rate of 2 tons per acre to form a continuous blanket over the seed bed, with no more than approximately 2 inches uniform thickness at loose measurement. Excessive amounts or bunching of mulch shall not be permitted.
 - 1. Anchor mulch by an acceptable method.
 - 2. Leave mulch in place and allow to disintegrate unless otherwise specified.
 - 3. Remove any anchorage or mulch that has not disintegrated at time of first mowing. Anchors may be removed or driven flush with ground surface.
- E. Water seeded areas as often as required to obtain germination and maintain a satisfactory sod growth. Water in a manner as to prevent washing out of seed.

- F. Hydroseeding may be accepted as an alternative method of applying fertilizer, seed, and mulch. If utilizing hydroseeding, submit all data regarding materials and application rates to the Remediation Engineer for review as described in Article 1.02.
- G. Erosion Control
 - 1. Place and secure erosion control fabric in restoration areas indicated on the Design Drawings immediately after seeding and as directed by the Remediation Engineer.
 - 2. Place and secure erosion control (specified in Article 2.01) in accordance with manufacturer specifications.

3.04 MAINTENANCE

- A. Maintain restoration areas until final acceptance by the Remediation Engineer.
- B. Fill, grade smooth, and reseed and mulch or blanket all erosion rills or gullies in the topsoil layer with additional topsoil, at no additional cost.
- C. Maintain and repair all seeded areas until at least 80 percent of the perennial vegetative density is established. Reseed and mulch all bare or poorly vegetated areas must be at no additional cost.

END OF SECTION

APPENDIX C

Community Air Monitoring Plan

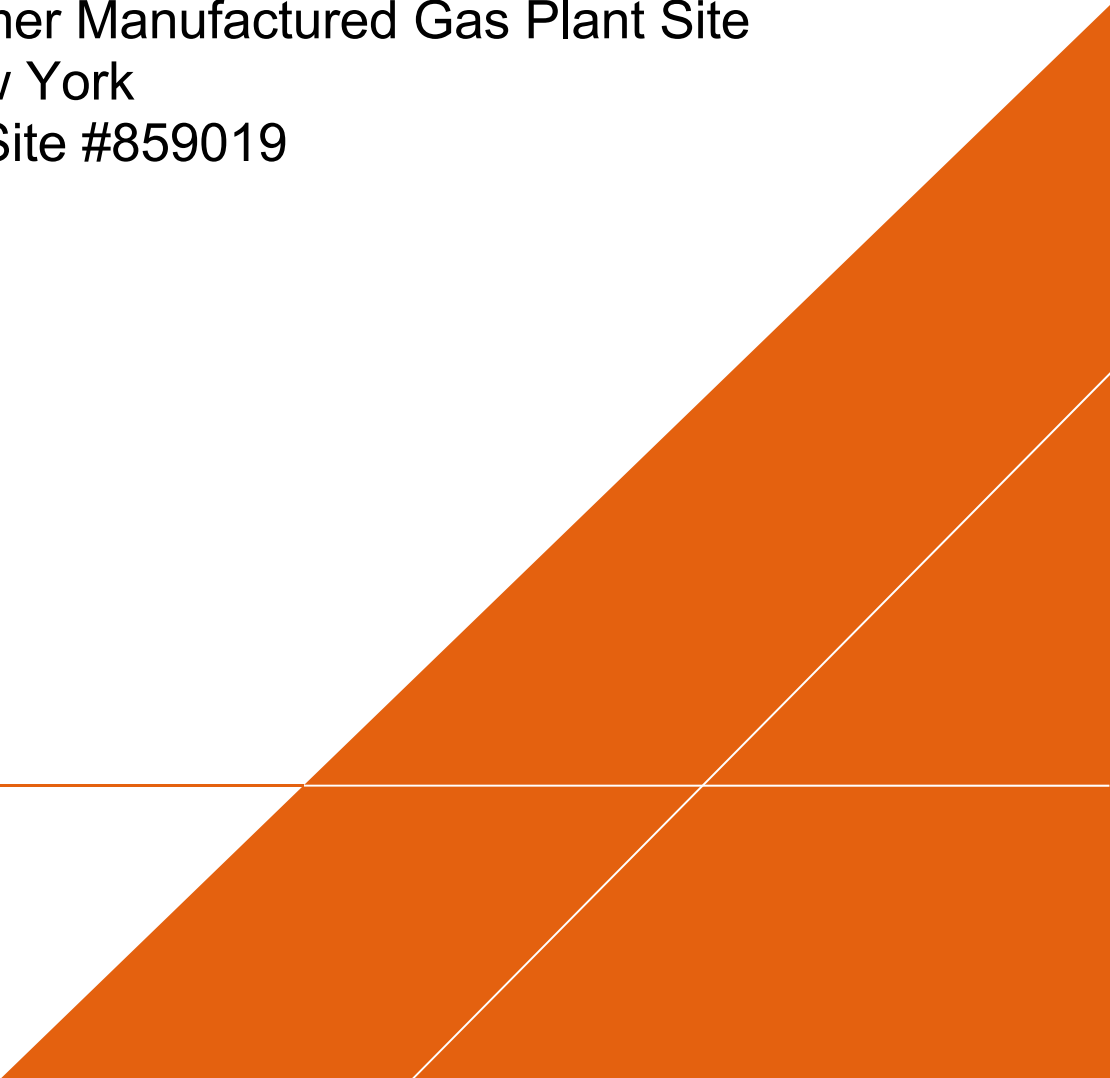


NYSEG

COMMUNITY AIR MONITORING PLAN

Clyde Former Manufactured Gas Plant Site
Clyde, New York
NYSDEC Site #859019

May 2019

A large, solid orange geometric shape, resembling a stylized triangle or a section of a larger triangle, is positioned in the bottom right corner of the page. It is composed of two overlapping triangles, creating a complex, angular form. A thin white line runs diagonally through the shape, and a horizontal white line intersects it near the bottom.

COMMUNITY AIR MONITORING PLAN

Clyde Former MGP Site

Clyde, New York

NYSDEC Site #859019

Prepared for:
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ATTACHMENTS

- 1 *New York State Department of Health Generic Community Air Monitoring Plan* (Appendix 1A of DER-10)
- 2 *Fugitive Dist Suppression and Particulate Monitoring* (Appendix 1B of DER-10)

ACRONYMS AND ABBREVIATIONS

| | |
|-------------------|---|
| bgs | below ground surface |
| CAMP | Community Air Monitoring Plan |
| COC | constituent of concern |
| DER | Department of Environmental Remediation |
| MGP | manufactured gas plant |
| NYSDEC | New York State Department of Environmental Conservation |
| NYSDOH | New York State Department of Health |
| NYSEG | New York State Electric and Gas |
| PAH | polycyclic aromatic hydrocarbon |
| PM ₁₀ | particulate matter less than 10 micrometers in diameter |
| ppm | parts per million |
| RD | Remedial Design |
| TWA | time-weighted average |
| VOC | volatile organic compound |
| µg/m ³ | micrograms per cubic meter |

1 INTRODUCTION

This *Community Air Monitoring Plan* (CAMP) has been prepared to support the implementation of remedial activities at the New York State Electric and Gas (NYSEG) Clyde Former manufactured gas plant (MGP) site (site) located in Clyde, New York. This CAMP fulfills the general requirements set forth by the New York State Department Environmental Conservation (NYSDEC) in *DER-10 / Technical Guidance for Site Investigation and Remediation* (DER-10; NYSDEC 2010). Specifically, Appendix 1A of DER-10 (included herein as Exhibit I) provides general guidance and protocols for the preparation and implementation of a CAMP. In addition, Appendix 1B of DER-10 (included herein as Exhibit II) supplements the contents of Appendix 1A and provides additional requirements for fugitive dust/particulate monitoring. Details related to the remedial activities are presented in the *Remedial Design* (RD).

The intent of this CAMP is to provide a measure of protection for downwind communities from potential airborne releases of constituents of concern during intrusive and/or potential dust-generating remedial construction activities at the site. This CAMP specifies the air emission action levels, air monitoring procedures, monitoring schedule, and data collection and reporting to be performed during the implementation of remedial activities.

As indicated in Specification Section 01 35 49 (Community Air Monitoring Plan), the Remediation Engineer will provide all labor, materials, and equipment necessary to implement the community air monitoring program specified in this CAMP.

1.1 Site Location and Description

The Clyde former MGP site is located along the west side of Sodus Street (approximately 16 Sodus Street) in the central business district of the Village of Clyde. The site primarily consists of two parcels of land that are owned by NYSEG, herein referred to as the western and eastern parcels.

The NYSEG Clyde Electrical Substation is located on the western parcel. The majority of the former MGP features were in this area. The substation is surrounded by a perimeter fence and access is limited to NYSEG employees. Inside the substation fence, the ground surface is covered by gravel. Outside of the fenced area to the west and south, the ground surface is covered by weeds, brush, and small trees. To the east and north of the substation, the ground surface is covered by asphalt pavement and a gravel driveway that provides access to the substation from Sodus Street.

The eastern parcel of the NYSEG property was purchased in 2006 and is vacant land covered by weeds, brush, and small trees, except for the gravel access driveway for the substation along the northern side and northwestern corner of the parcel. The foundation for a former gas holder remains within this parcel. The remains of a concrete building foundation (not related to the MGP) is visible at the ground surface at the southeastern portion of the eastern parcel.

Abutting the site to the north are three parcels of land (from east to west): an irregular shaped area of land that forms the southwest portion of a property occupied by the Veterans of Foreign Wars; a vacant lumberyard; and vacant land owned by the Village of Clyde. During the time of MGP operations, the Erie Canal and towpath were present in the southern portions of these three parcels. The Erie Canal channel was filled-in with construction debris by the Village of Clyde in the late 1930's.

To the south of the site is an active railroad corridor operated by the CSX Railroad Company – New York Central Lines, Limited Liability Company. To the south of the railroad corridor is the New York State (NYS) arcadis.com

Barge Canal. The section of the NYS Barge Canal in the Village of Clyde is a “canalized” section of the former Clyde River. The former river channel was excavated/modified to form the canal approximately five years following decommissioning of the MGP.

Directly to the east of the site is the Village of Clyde Museum which is operated by the Galen Historical Society. To the southeast of the site is a building which is currently being used as a bottle and can return (redemption) center. Sodus Street is located to the east of these buildings.

To the west of the site is a second parcel of land owned by the Village of Clyde. This parcel is currently vacant land and is covered by weeds, brush, and small trees.

The entire site and all the adjacent offsite parcels discussed above are zoned for Commercial Use (C1 Designation) by the Village of Clyde. The nearest residential property is approximately 360 feet to the north on Columbia Street.

1.2 Summary of Remedial Activities

In general, the remedial activities to be performed at the site include:

- Excavation and offsite disposal of grossly contaminated soil; soil containing semi-volatile organic compounds (SVOCs) exceeding 500 parts per million (ppm); and soils that create a nuisance condition. Approximately 6,000 cubic yards (CY) of soil will be removed from the ground surface to the top of bedrock and treated offsite.
- Backfilling with clean fill. Onsite soil that does not exceed soil cleanup objectives (SCOs), for the use of the site and/or the protection of groundwater, may be used to backfill the excavation below a cover system.
- Biodegrading contaminants in groundwater. The biological breakdown of contaminants through in-situ enhanced aerobic respiration will be performed by placing an oxygen additive compound, or similar material, into the subsurface.
- Constructing a site cover to allow for commercial use of the site. The cover will consist either of structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable SCOs. The soil cover will be placed over a demarcation layer as necessary, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer.

Additional details regarding remedial activities are provided in the RD.

1.3 Potential Air Emissions Related to Remedial Activities

Ground-intrusive and certain non-intrusive activities have the potential to generate localized impacts to air quality. Such activities are anticipated to include, but may not be limited to the following:

- Material excavation to the limits shown in the Remedial Design.
- Material handling and storage (e.g., manipulation of excavated materials to render them suitable for offsite treatment/disposal, stockpiling of materials, loading of materials for transport to the offsite treatment and/or disposal facility[ies], etc.).

- Installing excavation sidewall support.
- Monitoring well decommissioning.
- Decontamination activities.
- Unloading/stockpiling clean backfill and materials subject to re-use for subsequent placement onsite.
- Backfilling/restoring remediated and other disturbed areas.

1.4 Community Air Monitoring Objective

Community air monitoring will be performed during the remedial construction activities to provide a measure of protection for the downwind community from: (1) potential airborne releases of manufactured gas plant- (MGP-) related constituents of concern (COCs) – specifically, volatile organic compounds (VOCs) and polycyclic aromatic hydrocarbons (PAHs); and (2) nuisance MGP-related odors. VOCs are more volatile (easily evaporated) than PAHs and, therefore, are generally of greater concern when monitoring air quality during the remediation associated with former MGP sites. The airborne concentration of respirable dust (particulate matter less than 10 micrometers in diameter [PM₁₀]) will also be monitored due to its ability to co-transport MGP-related COCs.

1.5 Basis of Design for Community Air Monitoring

The community air monitoring program has been designed to:

- Establish baseline (pre-remediation) concentrations of MGP-related COCs in ambient air before ground-intrusive or dust-generating activities are initiated at the site.
- Provide an early warning system, through the use of alert levels (levels set below action levels) and automated notifications, so that vapor and dust emissions can be controlled onsite at the source before action levels are exceeded at the downwind perimeter of the site.
- Measure and document ambient air concentrations of the MGP-related COCs at the perimeter of the site to confirm compliance with the regulatory limits.
- Evaluate the on-going effectiveness of vapor/dust controls and construction techniques to maintain or reduce airborne concentrations of the MGP-related COCs below action levels at the downwind perimeter of the site.

2 ODOR, VAPOR, AND DUST CONTROLS

Odor, vapor, and dust emissions resulting from the activities identified in Section 1.3 will be controlled using a combination of: (1) water-based, biodegradable vapor mitigation agents (BioSolve® Pinkwater® and Rusmar AC-645 Long-Duration Foam); (2) construction techniques; and (3) site management practices. A solution of BioSolve® Pinkwater® and water will be sprayed on exposed soils and excavation faces to control vapors/odors (as needed) when actively excavating or handling excavated materials. Rusmar AC-645 Long-Duration Foam will be sprayed on excavated soils and excavation faces to form a thick, viscous vapor barrier before extended work breaks and at the end of each work day. The foam will also be applied (as needed) on uncovered soil stockpiles during the workday. BioSolve® Pinkwater® and Rusmar AC-645 Long-Duration Foam will be mobilized to the site before any ground-intrusive or dust-generating activities are initiated and will be maintained onsite in sufficient supply throughout the project. The following construction techniques and site management practices will also be used during the project to control odor, vapor, and dust emissions:

- Applying a water spray to control dust.
- Covering excavation faces, material stockpiles, and clean fill materials using polyethylene sheeting (anchored appropriately to resist wind forces) before extended work breaks and at the end of each work day.
- Excavating, backfilling, loading, handling, and unloading excavated material and clean fill material in a manner that minimizes the generation of airborne dust.
- Hauling excavated material and clean fill material in properly covered vehicles.
- Restricting vehicle speeds on temporary access roads and active haul routes.
- Covering shallow excavations and stockpiles of clean fill material with polyethylene liners (anchored appropriately to resist wind forces) before extended work breaks and at the end of each work day.
- Minimizing the areas of bare soil exposed at one time and complying with other applicable erosion and sediment control requirements of Specification Section 01 57 05 (Temporary Controls).
- Complying with cleaning and dust control requirements of Specification Section 01 55 13 (Temporary Access Roads) and progress cleaning requirements of Specification Section 01 74 05 (Cleaning).

As required by Specification Section 01 57 05, odor, vapor, and dust controls will be proactively employed during the work to: (1) prevent exceedances of the total VOC and PM₁₀ action levels specified in Specification Section 01 35 49 and in Section 3.2 of this CAMP; and (2) mitigate MGP-related odor emissions to the extent practicable and to the satisfaction of NYSEG, the Remediation Engineer, NYSDEC, and the New York State Department of Health (NYSDOH).

No intrusive work is proposed within 20 feet of existing structures and NYSDOH Special Requirements CAMP monitoring are not required.

3 REAL-TIME AIR MONITORING FOR TOTAL VOCs AND PM₁₀

The community air monitoring program is intended to be a discrete program that will be operated in conjunction with the Exclusion Zone (i.e., work zone) air monitoring. The Remediation Contractor will be responsible for conducting work zone air monitoring. The Remediation Engineer will conduct real-time community air monitoring throughout the remedial construction.

Real-time air monitoring for total VOCs and PM₁₀ will be performed at one upwind and two downwind locations at the perimeter of the work area during all ground-intrusive or dust-generating construction activities. For the purpose of this CAMP, the “perimeter of the work area” is defined as the limits of the area where ground-intrusive or dust-generating work is being performed, or half the distance to the nearest potential receptor or occupied residential/commercial structure, whichever is less, but in no case less than 20 feet.

Community air monitoring will be conducted prior to initiating the remedial action to establish adequate baseline data and until such time that intrusive and/or potential dust generating activities are complete. The frequency of community air monitoring will be relative to the level of site work activities being conducted, and may be adjusted as the work proceeds and in consideration of the monitoring results. Air monitoring for VOCs or PM₁₀ may be discontinued during periods of heavy precipitation that would otherwise result in unreliable data or damage to the monitoring equipment. Meteorological monitoring will be performed continuously during work activities.

3.1 Perimeter Air Monitoring System

As described in Specification Section 01 35 49, real-time air monitoring for total VOCs and PM₁₀ will be performed using a perimeter air monitoring system generally consisting of three portable air monitoring stations and a portable weather station. Each of these components is described in further detail below.

3.1.1 Air Monitoring Stations

Each air monitoring station will contain: (1) a portable, data-logging photoionization detector (MiniRAE 3000 by RAE Systems, Inc. or equal) for monitoring the airborne concentration of total VOCs; and (2) a portable, data-logging aerosol photometer (DustTrak II Aerosol Monitor Model 8530 by TSI, Inc. or equal) for monitoring the airborne concentration of PM₁₀. The monitoring equipment will be housed in portable, weather-tight enclosures, which will be mounted on surveying tripods at a height of approximately 4.5 to 5.5 feet (breathing zone height). All average concentrations (calculated for continuous 15-minute increments [e.g., 08:00 to 08:15, 08:15 to 08:30]) and any instantaneous readings taken to assess appropriate course of action will be recorded using an electronic data logger and/or in the field logbook and summarized in weekly CAMP reports to NYSEG, Remediation Engineer, NYSDEC, and NYSDOH.

Air monitoring stations will be deployed at the start of each work day before any ground-intrusive or dust-generating activities are initiated. Upwind and downwind monitoring locations will be selected based on the prevailing wind direction and the nature and location of the activities anticipated to be performed that day. The monitoring stations will be designated as follows: “UPW” for the upwind station and “DNW1” and “DNW2” for two downwind stations. Wind direction will be monitored throughout the day, and stations will be re-located or re-assigned, as appropriate. If wind direction shifts radically during the workday and for an extended period of time such that the upwind location and downwind locations no longer fall within

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acceptable guidelines (+/- 60° compass change from the original wind direction), the monitoring stations will be relocated so that the upwind and downwind locations are maintained. Any such changes in monitoring locations will be documented.

Monitoring equipment will be calibrated on a daily basis or more frequently if recommended by the manufacturers. Hourly or more frequent field checks of the monitoring equipment will also be performed during the work day to verify proper function. Damaged or malfunctioning equipment will be promptly removed from service and replaced. The date, time, and outcome of each equipment calibration and field check will be documented in a field log book.

Total VOC and PM₁₀ data will be downloaded from the air monitoring stations at the end of each work day. Data files will be stored onsite in a computer database, indexed by date, station number, and station location (upwind or downwind), and will be backed-up periodically to disc or a portable hard drive.

3.1.2 Weather Station

A portable weather station (Wireless Vantage Pro2 by Davis Instruments Corporation, Inc. or equal) will be used to monitor local meteorological conditions during the project. The weather station will be installed in a prominent location at the site to provide representative meteorological data, including wind speed, wind direction, relative humidity, and ambient temperature. The meteorological monitoring system will be equipped with electronic data-logging capabilities. The meteorological monitoring system will be deployed at a location in accordance with siting criteria established by the NYSDEC for meteorological monitoring systems (New York State Air Guide-19 – “Oversight of Private Air Monitoring Networks,” dated June 1989). Use of these guidelines enables the meteorological monitoring system to provide representative observations of the local meteorological conditions. Security and accessibility will also be considered in selecting a location for the weather station.

3.2 Air Monitoring Action Levels

The total VOC and PM₁₀ action levels for the community air monitoring program are time-weighted average (TWA) concentrations, as calculated over a 15-minute period, and represent the difference between the ambient air TWA concentrations measured at the upwind and downwind monitoring stations. As described below, these action levels, if exceeded, trigger requirements for increased monitoring, corrective actions to abate emissions, and/or temporary work stoppages. Monitoring equipment will be programmed to immediately notify site personnel (via audible/visible alarms and wireless telemetry) if the total VOC or PM₁₀ action level is exceeded during the project.

3.2.1 Action Levels for Total VOCs

If the ambient air concentration of total VOCs at the downwind monitoring stations (i.e., downwind perimeter of the work area or Exclusion Zone) exceeds 5 ppm above the background (upwind) concentration for the 15-minute average, work activities will be temporarily halted while monitoring continues. If the total VOC concentration readily decreases (through observation of instantaneous readings) below 5 ppm above the background (upwind) concentration, work activities will resume with continued monitoring.

If the ambient air concentration of total VOCs at the downwind perimeter of the work area or Exclusion Zone persists at levels in excess of 5 ppm but less than 25 ppm above the background (upwind) concentration: (1) work activities will be halted; (2) the source of the elevated total VOC concentration will be identified; (3)

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corrective actions will be implemented to reduce or abate the emissions; and (4) air monitoring will be continued. Once these activities have been implemented, work activities will resume provided the following two conditions are met:

- The 15-minute average total VOC concentrations remain below 5 ppm above background.
- The total VOC concentration 200 feet downwind of the work area/Exclusion Zone or half the distance to the nearest potential receptor or residential/commercial structure (whichever is less but in no case less than 20 feet) is below 1 ppm over the background (upwind) concentration for the 15-minute average.

If the ambient air concentration of total VOCs at the downwind perimeter of the work area or Exclusion Zone air monitoring stations exceeds 25 ppm above the background (upwind) concentration, work activities will stop and corrective actions will be implemented to reduce or abate the emissions. Work will not resume until authorized by NYSEG, the Remediation Engineer, or NYSDEC.

3.2.2 Action Levels for PM₁₀

If the average ambient air concentration of PM₁₀ at any one (or more) of the downwind perimeter locations exceeds 100 micrograms per cubic meter ($\mu\text{g}/\text{m}^3$) above the upwind concentration for the 15-minute average, or if airborne dust is observed leaving the work area, then dust control measures will be implemented. Work may continue while dust controls are employed provided that the downwind PM₁₀ concentration does not exceed 150 $\mu\text{g}/\text{m}^3$ above the upwind concentration for the 15-minute average.

If, after employing dust controls, the downwind PM₁₀ concentration is greater than 150 $\mu\text{g}/\text{m}^3$ above upwind concentration for the 15-minute average, work will be stopped while activities are re-evaluated. Work will resume provided that the dust controls are successful in: (1) reducing the downwind PM₁₀ concentration to less than 150 $\mu\text{g}/\text{m}^3$ above the upwind concentration for the 15-minute average; and (2) preventing visible dust from leaving the work area.

3.3 Notification and Exceedance Report

NYSEG or a designated representative will notify the NYSDEC project managers (by telephone or e-mail) within two hours if the total VOC or PM₁₀ action level is exceeded during the project. Within 24 hours after the exceedance, the Remediation Engineer will submit an exceedance report to the NYSDEC, NYSDOH, and NYSEG project managers. As described in Specification Section 01 35 49, each exceedance report will include, at a minimum, the following:

- Date, day of the week, and time of exceedance.
- General location and brief description of work being performed at time of exceedance.
- Weather conditions at time of exceedance.
- For each air monitoring station, 15-minute time weighted average concentration of total VOCs and PM₁₀ at time of exceedance.
- Source or cause of exceedance.
- Corrective actions taken or to be taken in response to exceedance.
- Date and time verbal or written notification was provided to NYSDEC.

Community Air Monitoring Plan

A copy of the exceedance report will also be included in the weekly air monitoring report, which is more fully described in Section 5 of this CAMP.

4 PERIODIC MONITORING FOR MGP-RELATED ODORS

During work hours, hourly or more frequent walks around the perimeter of the work area will be performed to monitor for the presence of MGP-related odors. Odor monitoring will be performed by the third-party air monitoring technician, who will not be involved in the day-to-day construction activities within the work area where such personnel may become acclimated to MGP-related odors. Perimeter checks will be performed more frequently, as necessary, depending on: (1) the nature and location of work being performed; and (2) local meteorological conditions.

Meteorological conditions, including temperature, humidity, precipitation, atmospheric pressure, wind direction, and wind speed, can work synergistically with a positive or negative impact on the generation and dissemination of MGP-related odors. For example, MGP-related odors generally tend to be less prevalent with lower temperatures, precipitation, or high humidity. MGP-related odor dissemination is greatly influenced by wind direction and wind speed.

4.1 MGP-Related Odor Response

If MGP-related odors are noticed at the perimeter of the work area, work will continue and odor, vapor, and dust controls will be employed to abate emissions. Additionally, construction techniques will be evaluated and modified, if necessary and appropriate, and more frequent checks of the perimeter of the work area will be performed. If MGP-related odors persist at the perimeter of the work area, work will be stopped while activities are re-evaluated. The source or cause of the MGP-related odors will be identified, and additional odor, vapor, and dust controls will be employed. Work will resume provided that the controls are successful in abating odors at the perimeter of the work area.

Any odor complaints received from the public will be directed to NYSEG's onsite representative. The legitimacy of the complaint will be verified based on the work activities being performed, the prevailing wind direction, and other meteorological factors. In response to a verified odor complaint, perimeter monitoring will continue and additional odor, vapor, and dust controls will be employed to abate odor emissions. Construction techniques will also be evaluated and modified, if necessary and appropriate.

4.2 Daily Odor Monitoring Log

The time and outcome of each perimeter check will be documented in a daily odor monitoring log, specifically noting the presence or absence of MGP-related odors and identifying the general location(s) along the perimeter of the work area where MGP-related odors (if any) are noticed. The time and outcome of any odor complaints from the public will also be documented in the daily odor monitoring log.

Copies of the daily odor monitoring logs will be included in the weekly air monitoring report, which is described in Section 5 of this CAMP.

5 REPORTING

Air monitoring reports will be prepared on a weekly basis to summarize the total VOC, PM₁₀, and MGP-related odor monitoring results. Each weekly report will include, at a minimum, the following information for each day that monitoring is performed:

- Date and day of the week.
- General location and brief description of work performed at the site.
- Graphs showing concentrations of VOCs and PM₁₀ for each air monitoring station.
- Daily maximum 15-minute TWA concentration of total VOCs and PM₁₀ for each air monitoring station.
- Exceedances (if any) of total VOC and PM₁₀ action levels, including copy of exceedance report(s).
- Site plan showing approximate locations of upwind and downwind air monitoring stations at the site and prevailing wind direction for the day.
- Copy of the daily odor monitoring log.

Air monitoring reports will be submitted on a weekly basis to NYSEG, Remediation Engineer, NYSDEC, and NYSDOH throughout the project.

6 REFERENCES

NYSDEC. 1989. New York State Air Guide-19 – Oversight of Private Air Monitoring Networks. June 1989.

NYSDEC. 2010. DER-10 Technical Guidance for Site Investigation and Remediation. May 2010.

APPENDIX D

Community and Environmental Response Plan

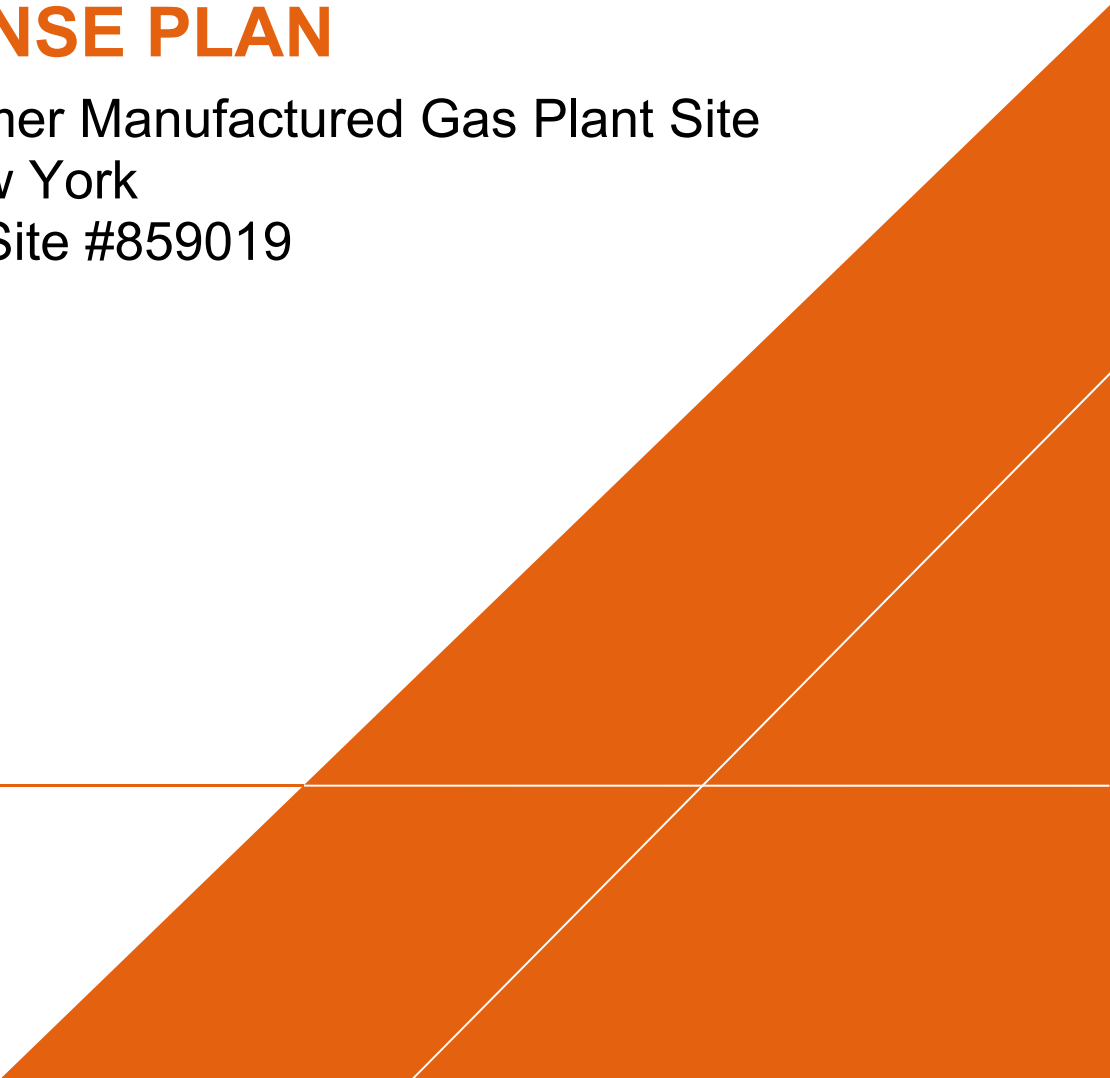


NYSEG

COMMUNITY AND ENVIRONMENTAL RESPONSE PLAN

Clyde Former Manufactured Gas Plant Site
Clyde, New York
NYSDEC Site #859019

May 2019

A large, solid orange geometric shape, resembling a stylized triangle or a section of a larger triangle, is positioned in the bottom right corner of the page. It is composed of two overlapping triangles, creating a complex, angular form. A thin white line runs diagonally through the shape, and a horizontal white line intersects it near the bottom.

COMMUNITY AND ENVIRONMENTAL RESPONSE PLAN

Clyde Former MGP Site

Clyde, New York

NYSDEC Site #859019

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May 2019

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ACRONYMS AND ABBREVIATIONS

| | |
|--------|---|
| CAMP | Community Air Monitoring Plan |
| CERP | Community and Environmental Response Plan |
| CY | cubic yard |
| NAPL | non-aqueous phase liquid |
| NYS | New York State |
| NYSDEC | New York State Department of Environmental Conservation |
| NYSDOH | New York State Department of Health |
| NYSEG | New York State Electric and Gas |
| MGP | manufactured gas plant |
| ppm | parts per million |
| RD | Remedial Design |
| SCO | soil cleanup objective |
| SVOC | semi-volatile organic compound |
| SWPPP | Storm Water Pollution Prevention Plan |
| VOC | volatile organic compound |

1 INTRODUCTION

This *Community and Environmental Response Plan* (CERP) has been prepared to support the implementation of remedial activities at the New York State Electric and Gas (NYSEG) Clyde Former Manufactured Gas Plant (MGP) Site located in Clyde, New York (Site No. 859019) (the site). Details related to the remedial activities are presented in the *Remedial Design* (RD), to which this CERP is an appendix.

This CERP has been prepared in accordance with 2010 New York State Department of Environmental Conservation (NYSDEC) DER-10: *Technical Guidance for Site Investigation and Remediation*. The purpose of this CERP is to present a summary of the site monitoring and work practices that will be completed to address potential short-term impacts to the surrounding community and/or environmental resources. Additional details regarding site monitoring and work practices are presented in the RD and the associated appendices including, but not limited to:

- Design Drawings (Appendix A)
- Specifications (Appendix B)
- New York State Department of Health (NYSDOH) Generic Community Air Monitoring Plan (CAMP) (Appendix C)
- Contingency Plan (Appendix E)
- Quality Assurance Project Plan (Appendix F)
- Erosion and Sedimentation Control Plan (Appendix G)
- Noise Monitoring Plan (Appendix H)
- Field Sampling Plan (Appendix I)

Section 2 of this CERP summarizes the monitoring to be conducted during remedial construction activities, and Section 3 describes site management and controls.

1.1 Site Location and Description

The Clyde former MGP site is located along the west side of Sodus Street (approximately 16 Sodus Street) in the central business district of the Village of Clyde. The site primarily consists of two parcels of land that are owned by NYSEG, herein referred to as the western and eastern parcels.

The NYSEG Clyde Electrical Substation is located on the western parcel. The majority of the former MGP features were in this area. The substation is surrounded by a perimeter fence and access is limited to NYSEG employees. Inside the substation fence, the ground surface is covered by gravel. Outside of the fenced area to the west and south, the ground surface is covered by weeds, brush, and small trees. To the east and north of the substation, the ground surface is covered by asphalt pavement and a gravel driveway that provides access to the substation from Sodus Street.

The eastern parcel of the NYSEG property was purchased in 2006 and is vacant land covered by weeds, brush, and small trees, except for the gravel access driveway for the substation along the northern side

and northwestern corner of the parcel. The foundation for a former gas holder remains within this parcel. The remains of a concrete building foundation (not related to the MGP) is visible at the ground surface at the southeastern portion of the eastern parcel.

Abutting the site to the north are three parcels of land (from east to west): an irregular shaped area of land that forms the southwest portion of a property occupied by the Veterans of Foreign Wars; a vacant lumberyard; and vacant land owned by the Village of Clyde. During the time of MGP operations, the Erie Canal and towpath were present in the southern portions of these three parcels. The Erie Canal channel was filled-in with construction debris by the Village of Clyde in the late 1930's.

To the south of the site is an active railroad corridor operated by the CSX Railroad Company – New York Central Lines, Limited Liability Company. To the south of the railroad corridor is the New York State (NYS) Barge Canal. The section of the NYS Barge Canal in the Village of Clyde is a “canalized” section of the former Clyde River. The former river channel was excavated/modified to form the canal approximately five years following decommissioning of the MGP.

Directly to the east of the site is the Village of Clyde Museum which is operated by the Galen Historical Society. To the southeast of the site is a building which is currently being used as a bottle and can return (redemption) center. Sodus Street is located to the east of these buildings.

To the west of the site is a second parcel of land owned by the Village of Clyde. This parcel is currently vacant land and is covered by weeds, brush, and small trees.

The entire site and all the adjacent offsite parcels discussed above are zoned for Commercial Use (C1 Designation) by the Village of Clyde. The nearest residential property is approximately 360 feet to the north on Columbia Street.

1.2 Summary of Remedial Activities

In general, the remedial activities to be performed at the site include:

- Excavation and offsite disposal of grossly contaminated soil; soil containing semi-volatile organic compounds (SVOCs) exceeding 500 parts per million (ppm); and soils that create a nuisance condition. Approximately 6,000 cubic yards (CY) of soil will be removed from the ground surface to the top of bedrock and treated offsite.
- Backfilling with clean fill. Onsite soil that does not exceed soil cleanup objectives (SCOs), for the use of the site and/or the protection of groundwater, may be used to backfill the excavation below a cover system.
- Biodegrading contaminants in groundwater. The biological breakdown of contaminants through in-situ enhanced aerobic respiration will be performed by placing an oxygen additive compound, or similar material, into the subsurface.
- Constructing a site cover to allow for commercial use of the site. The cover will consist either of structures such as buildings, pavement, sidewalks comprising the site development or a soil cover in areas where the upper one foot of exposed surface soil will exceed the applicable SCOs. The soil cover will be placed over a demarcation layer as necessary, with the upper six inches of the soil of sufficient quality to maintain a vegetation layer.

Additional details regarding remedial activities are provided in the RD.

1.3 Project Responsibilities

Responsibilities of NYSEG, the Remediation Engineer, and the Remediation Contractor, as they relate to the implementation of this CERP, are presented below.

- *NYSEG* – Primary responsibility is to coordinate with the Remediation Contractor and Remediation Engineer (as necessary) to implement the required work activities in conformance with the RD. NYSEG is responsible for contracting with a Remediation Engineer; Remediation Contractor; and select waste haulers and waste treatment/disposal facilities.
- *Remediation Engineer* – Responsibility is to provide project management/oversight to observe and monitor implementation of the remedial activities. The Remediation Engineer is responsible for performing community air monitoring in accordance with the site-specific CAMP. The Remediation Engineer is also responsible for collecting imported fill and waste characterization samples (both soil and water [as needed]) and contracting with a laboratory for analysis of collected samples, as necessary.
- *Remediation Contractor* – Primary responsibility is to complete remedial activities as presented in the RD. The Remediation Contractor is responsible for verifying that community air monitoring is implemented prior to conducting intrusive site activities. The Remediation Contractor is responsible for implementing controls to address community air monitoring exceedances, if any. The Remediation Contractor is also responsible for conducting and implementing the general site management practices and controls described in Section 3.

2 SITE MONITORING

This section presents a summary of the monitoring to be conducted during implementation of the remedial activities to evaluate potential short-term impacts to the surrounding community.

2.1 Community Air Monitoring

Community air monitoring will be conducted by the Remediation Engineer during intrusive and/or potential dust-generating activities (e.g., excavation, backfilling, and material handling activities). Detailed requirements for air monitoring procedures are presented in the site-specific CAMP. Air monitoring procedures will be completed in accordance with the May 2010 NYSDOH Generic Community Air Monitoring Plan and generally consist of monitoring for volatile organic compounds (VOCs) and particulates at multiple locations to establish site background conditions and to evaluate air quality at the perimeter of the active remediation work areas (e.g., excavation area).

As presented in the CAMP and Section 01 35 49 - Community Air Monitoring Plan, exceedances of VOC and/or particulate action levels will require emission controls and dust-suppression measures. Control measures to be implemented by the Remediation Contractor are presented in Section 01 57 05 - Temporary Controls. Additionally, the CAMP includes community notification procedures to be conducted if air monitoring action levels continue to be exceeded after implementation of emission controls.

2.2 Odor Monitoring

The Remediation Engineer shall perform periodic walks around the perimeter of the work area to monitor for MGP-related odors in accordance with the CAMP during working hours. The perimeter checks will be performed more frequently, as necessary, depending on the work being performed. If MGP-related odors are noticed along the perimeter of the work area, work will continue and odor, vapor, and dust suppression techniques employed to abate emissions, in accordance with Specification Section 01 57 05 - Temporary Controls. Additionally, construction techniques will be evaluated and modified, if necessary and appropriate, and more frequent checks of the work area perimeter for MGP-related odors will be performed. If MGP-related odors continue to be noticed at the perimeter of the work area, work will be stopped while activities are re-evaluated. The source or cause of the MGP-related odors will be identified and additional modifications of construction techniques or additional methods to abate emissions will be implemented. Work will resume provided the measures are successful at abating the odors noticed along the work area perimeter.

Detailed requirements of odor monitoring are presented in the site-specific CAMP.

2.3 Noise Monitoring

Prior to mobilization by the Remediation Contractor, the third party consulting firm (Consultant) shall conduct background noise monitoring using a Quest Q-500 dosimeter, Larson Davis 820 Noise Meter, or equivalent. Background monitoring shall be conducted at four locations along the property boundary between 7:00 am and 6:00 pm over a three-day period to establish ambient noise levels, including noise levels generated by local truck traffic, as presented in the Noise Monitoring Plan.

The Remediation Engineer shall periodically (e.g., semi-weekly or more frequently based on potential noise complaints) monitor noise levels along the property boundary when remedial construction activities are being conducted. If noise complaints are received, NYSEG and the Remediation Engineer shall coordinate with NYSDEC to determine if noise levels are greater than background levels, and the Remediation Contractor may be required to employ additional noise reduction measures (e.g., noise dampening curtains, modified work sequence, etc.).

2.4 Geotechnical Monitoring

The Remediation Contractor will conduct geotechnical monitoring of the adjacent electrical substation in accordance with Specification Section 31 09 13 (Geotechnical Instrumentation and Monitoring) to assess and document movement of substation structures adjacent to the work area during intrusive work (i.e., installation and removal of the excavation sidewall support system, excavation, and backfill activities).

3 SITE MANAGEMENT CONTROLS

This section presents a summary of site management practices and controls that will be implemented to minimize potential short-term impacts to the surrounding community during remedial activities.

3.1 Site Security and Traffic Controls

Public access to the site and work areas will be restricted during the remedial activities, to the extent practicable. Details regarding site security and project signage are presented on the Design Drawings and in Section 01 58 13 - Temporary Project Signage and Section 01 71 33 - Protection of Work and Property.

Temporary lane closures may occur for Sodus Street in preparation for and during performance of the remedial activities. If temporary lane closure(s) is necessary, the Remediation Contractor will use flagmen to manage traffic.

3.2 Erosion and Sediment Controls

Erosion and sediment control measures (e.g., silt fence, straw bale) will be provided, installed, and maintained by the Remediation Contractor to prevent silting and muddying of existing drainage systems, streams, rivers, etc. Details regarding locations and types of controls are presented on the Design Drawings and in Section 01 41 26 - Storm Water Pollution Prevention Plan [SWPPP] and Permit and Section 01 57 05 - Temporary Controls.

Erosion and sediment control measures will be installed and maintained in accordance with the latest edition of the NYSDEC New York State Standards and Specifications for Erosion and Sediment Control. At a minimum, the Remediation Contractor will inspect erosion and sediment control measures daily and after storm events. Inspection results will be summarized in weekly inspection reports. Report requirements are provided in Section 01 41 26 - SWPPP and Permit.

In general, the Remediation Contractor will take all precautions to prevent, or reduce to a minimum, any damage to surface water from pollution by debris, sediment, or other material, or from the manipulation of equipment and/or materials within or adjacent to existing and new drainage systems, the Barge Canal, or other nearby water bodies. The Remediation Contractor is prohibited from the following:

- Dumping spoil material into any drainage way, surface waters, or unspecified locations.
- Pumping silt-laden water from trenches or from within the excavation area into any drainage way, surface waters, or unspecified locations.
- Damaging vegetation beyond the extent necessary for remedial construction.
- Disposing of trees, brush, and other debris in any stream corridors, drainage way, or unspecified locations.

Following completion of the remedial activities, the Remediation Contractor will restore disturbed surfaces as indicated in the RD, or as approved by NYSEG and the Remediation Engineer.

3.3 Waste Management

In general, waste materials generated during implementation of the remedial activities will be managed based on the results of the waste characterization sampling and in accordance with the RD.

3.3.1 Solid Waste

The removed soil is anticipated to be disposed as a non-hazardous solid waste at facilities approved by NYSEG. Removed debris will be disposed or recycled at an appropriate facility approved by NYSEG.

3.3.2 Liquid Waste

All construction-related waters generated during remedial activities (i.e., decontamination water, water from soil dewatering, and water removed from material staging areas) will be collected and treated in accordance with the RD.

3.3.3 Non-Aqueous Phase Liquid

Free-phase non-aqueous phase liquid (NAPL) encountered during excavation activities will be collected (if in sufficient quantities to be recovered), placed in appropriate containers (e.g., 55-gallon drums), and staged onsite for characterization by the Remediation Engineer prior to offsite disposal at a NYSEG-approved (or selected) facility. Following characterization, the Remediation Contractor will coordinate with the NYSEG-selected offsite disposal facility for the transportation and disposal of the containerized NAPL.

3.4 Transportation Controls

The term “transporter” means the transporter and the Remediation Contractor if/when the transporter is subcontracted to the Remediation Contractor. The following is the preferred trucking route for the offsite transportation of solid and liquid wastes generated by the remedial activities at the site. The preferred trucking route for waste transporters, as well as haulers transporting materials to the site, includes the following roadways (in order of closest to farthest from the site):

- Sodus Street
- Columbia Street
- Glasgow Street / NY Route 414
- Interstate 90

Final trucking routes will be approved by NYSEG and/or the Remediation Engineer prior to use.

3.5 Spill Controls

In the event of a spill or release of material, based on the magnitude and potential seriousness of the spill or release, the Remediation Contractor will initiate the contingency measures presented in the Contingency Plan.

3.6 Decontamination

The Remediation Contractor will decontaminate (as necessary) all personnel and equipment that come into contact with excavated materials in accordance with Section 02 51 00 - Decontamination. At a minimum, the Remediation Contractor will decontaminate (to the satisfaction of NYSEG, the Remediation Engineer, and/or NYSDEC) the project equipment (including, but not limited to, removal of equipment, trucks, pumps, and hand tools) that comes in contact with removed materials prior to using the equipment to handle clean material and/or equipment being removed from the site. Any visible soils, sediments, or other debris will be promptly removed and disposed of in a manner consistent with the materials excavated.

The Remediation Contractor will conduct decontamination of personnel and equipment within the constructed decontamination area(s) shown on the Design Drawings, as appropriate based on the work being performed. The Remediation Contractor will perform decontamination activities until no visible soil, sediment, debris, or stains are present on the equipment surfaces (to the satisfaction of NYSEG, the Remediation Engineer, and/or NYSDEC).

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APPENDIX E

Contingency Plan

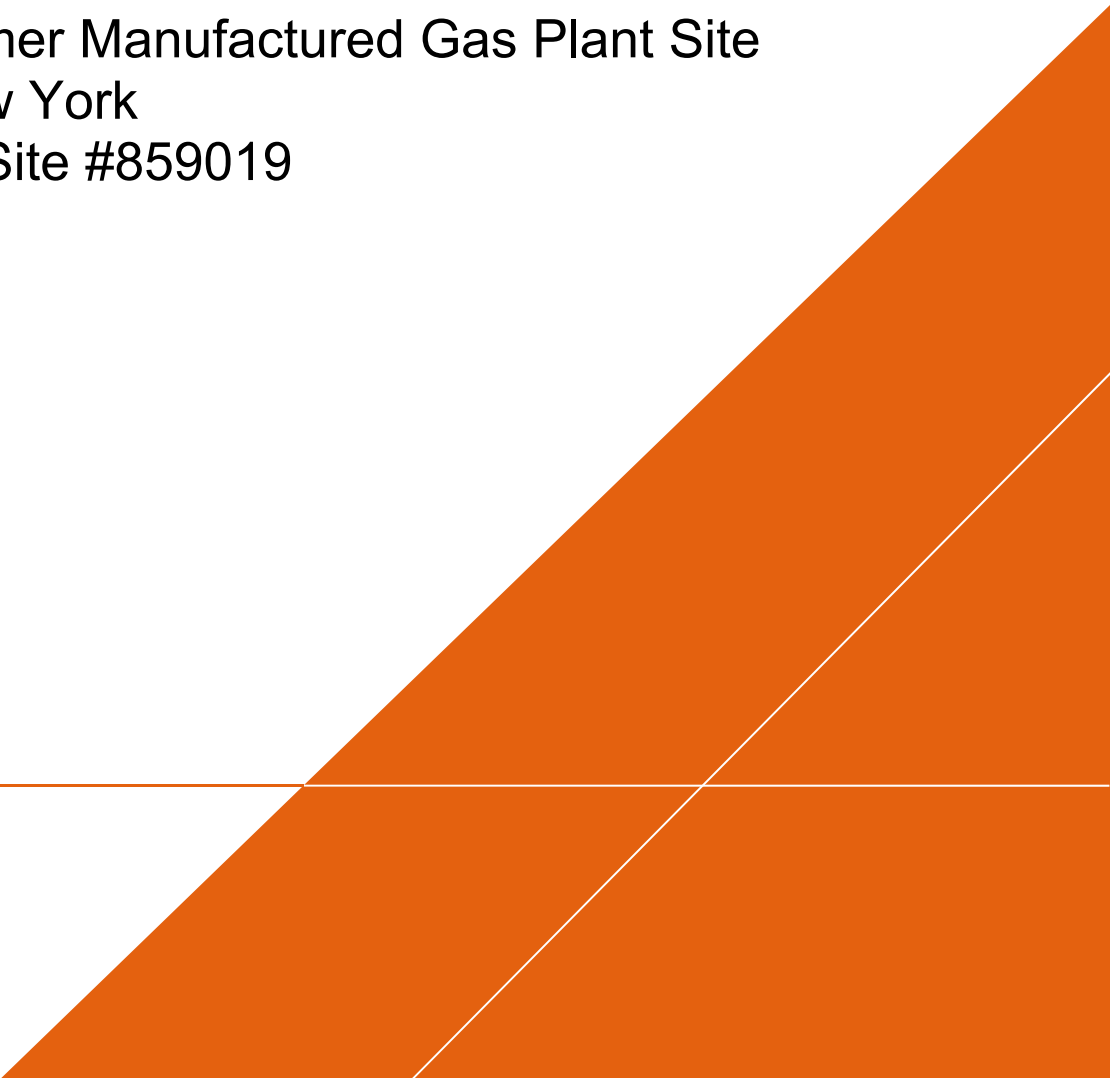


NYSEG

CONTINGENCY PLAN

Clyde Former Manufactured Gas Plant Site
Clyde, New York
NYSDEC Site #859019

May 2019

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CONTINGENCY PLAN

Clyde Former MGP Site

Clyde, New York

NYSDEC Site #859019

Prepared for:

NYSEG

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ACRONYMS AND ABBREVIATIONS

| | |
|-------|---|
| MGP | manufactured gas plant |
| NYSEG | New York State Electric and Gas |
| OSHA | Occupational Safety and Health Administration |
| PEC | Project Emergency Coordinator |
| PEL | Permissible Exposure Limit |
| PPE | personal protective equipment |
| RD | Remedial Design |
| SHSO | Site Health and Safety Officer |
| SDS | safety data sheet |

1 INTRODUCTION

This Contingency Plan has been prepared to support the remedial construction activities at the New York State Electric and Gas (NYSEG) Clyde Former Manufactured Gas Plant (MGP) Site (the site) located in Clyde, New York (Site No. 859019). The Contingency Plan provides responses to potential emergencies that may arise during construction of the selected remedy at the site. Details related to the selected remedy are presented in the Remedial Design (RD).

1.1 Contingency Plan Responsibilities

NYSEG's Remediation Contractor will identify a Site Health and Safety Officer (SHSO). The SHSO shall be made aware of any emergencies and coordinate any response activities carried out at the site. The SHSO shall also serve as the overall Project Emergency Coordinator (PEC) and have the ultimate authority in specifying and facilitating any contingency action.

If the SHSO is not able to perform the duties of the PEC, the PEC shall specify another senior individual (working for Remediation Contractor) to serve as the PEC. The alternate PEC shall become familiar with contingency plans developed by each Remediation Contractor/subcontractor.

1.2 Identifying the Hazards and Assessing the Risk

The objectives during any emergency shall be to first, protect human health and safety, and then the environment. Possible hazards to human health or the environment that may result from any emergency situation shall be identified by the PEC. The PEC shall take into consideration both direct and indirect effects of the incident. The PEC shall assess the possible risks to human health or the environment that may result from the emergency (e.g., release, fire, explosion, or severe weather conditions). The PEC shall make this assessment by:

- Identifying the materials involved in the incident.
- Consulting the appropriate occupational health guideline or safety data sheets (SDS) to determine the potential effects of exposure/release, and appropriate safety precautions.
- Identifying the exposure and/or release pathways and the quantities of materials involved.

Based on this information, the PEC shall determine the best course of action for dealing with the emergency and identify possible follow-up requirements (e.g., equipment repair, material disposal, etc.).

If the Remediation Contractor's personnel cannot control the incident without incurring undue risk, the PEC shall implement the Site Evacuation Procedures described in Section 3. If offsite neighboring population is at risk, the PEC will implement the Offsite Evacuation Procedures described in Section 3. The PEC shall notify NYSEG's Project Manager and the appropriate government agencies and departments that a situation resulting in the need for evacuation has occurred. Should emergency assistance in treating injuries or carrying out the evacuation be required, the PEC shall request assistance of local emergency response personnel (e.g., ambulance service, fire department, police department).

1.3 Conditions for Implementing the Contingency Plan

Potential emergency conditions that require implementation of this Contingency Plan include the following:

- Fire or explosion
- Occurrence of a spill or material release
- Severe weather conditions
- Physical or chemical injury to a worker

These emergency conditions are discussed in the following subsections. Additional emergency conditions that may require implementation of this Contingency Plan shall be identified by the PEC.

1.3.1 Fire and/or Explosion Conditions

Contingency procedures shall immediately be implemented upon notification that any of the following scenarios involving fire and/or explosion is imminent or has occurred:

- A fire that causes, or could cause, the release of toxic fumes.
- A fire that could possibly ignite nearby flammable materials or could cause heat-induced explosions.
- A fire that could possibly spread to offsite areas.
- A danger exists that an explosion could occur causing a safety or health hazard.
- An explosion has occurred.

1.3.2 Spill or Material Release Conditions

The following scenarios involving a spill or material release, whether imminent or having already occurred, shall cause implementation of contingency procedures:

- A spill or material release that could result in the release of flammable liquids or vapors, thus causing a fire or gas explosion hazard.
- A spill or material release that could cause the release of toxic vapors or fumes into the atmosphere in concentrations higher than the Occupational Safety and Health Administration (OSHA) Permissible Exposure Limits (PELs).
- A spill or material release that can be contained onsite where a potential exists for groundwater or surface water contamination.
- A spill or material release that cannot be contained onsite, resulting in a potential for offsite soil contamination and/or groundwater or surface water pollution.

All spills or material releases shall be reported immediately to the PEC. The PEC shall immediately identify the character, source, amount, and extent of any release. Initial identification shall be based on visual analysis of the material and location of the release. If the released material cannot be identified, samples of potentially affected media shall be taken for analysis, as directed by NYSEG.

1.3.3 Severe Weather Conditions

The following severe weather conditions, whether imminent or having occurred, may cause implementation of contingency procedures.

- A tornado has been sighted in the area.
- A tornado warning is in effect for the area.
- A lightning storm is underway in the area (storm center less than 5 miles away).
- Other severe weather or weather induced conditions (e.g., hurricane or flood).

1.3.4 Physical or Chemical Injury Conditions

The following worker injuries may cause implementation of the Contingency Plan:

- Major physical injuries
- Chemical injuries
- Severe symptoms of chemical overexposure

2 CONTINGENCY PROCEDURES

If any of the aforementioned conditions for implementing the Contingency Plan are met, the appropriate following contingency procedure(s) shall be performed.

2.1 Contingency Procedures for Fire/Explosion

When fire or explosion appear imminent or have occurred, all normal site activity shall cease. The PEC shall make an assessment of the potential risk and severity of the situation to decide whether the emergency event shall or shall not be readily controllable with existing portable fire extinguishers or site equipment and materials at hand. Firefighting shall not be done at the risk to site workers. Local fire departments shall be contacted in all situations in which fires and/or explosions have occurred. The following steps shall be taken for localized fire.

- Contact local fire departments.
- Move all personnel to an upwind location at an appropriately safe distance away.
- Determine if fire is within onsite personnel capabilities to attempt initial firefighting.
- Determine if smoke and/or fumes from fire are potentially impacting offsite areas.
- If the fire is not impacting offsite areas and is within onsite personnel capabilities, utilize most appropriate means of extinguishing fire (e.g., fire extinguishers, water, covering with soil).
- Once fire is extinguished, containerize and properly dispose of any spilled material, runoff, or soil.

If the situation appears uncontrollable and poses a direct threat to human life, fire departments shall be contacted and the evacuation procedures described in Section 3 shall be implemented. If the chances of an impending explosion are high, the entire area within a 1,000-foot radius of the fire source shall be evacuated. The PEC shall alert personnel when all danger has passed, as determined by the chief fire fighter from the responding fire department. All equipment (e.g., fire extinguishers) used in the emergency shall be cleaned and refurbished as soon as possible after the emergency has passed so that it will be ready for use in the event of any future emergency.

2.2 Contingency Procedures for Spills or Material Releases

If a hazardous waste spill, material release, or process upset resulting in probable vapor release is identified, the PEC shall immediately assess the magnitude and potential seriousness of the spill or release based upon:

- SDS for the material spilled or released.
- Source of the release or spillage of hazardous material.
- An estimate of the quantity released and the rate at which it is being released.
- The direction in which the spill or air release is moving.
- Personnel who may be or may have been in contact with the material, or air release, and possible injury or sickness as a result.

- Potential for fire and/or explosion resulting from the situation.
- Estimates of area under influence of the release.

If the spill or release is determined to be within the onsite emergency response capabilities, the PEC shall ensure implementation of the necessary remedial action. If the accident is beyond the capabilities of the operating crew, all personnel not involved with emergency response activity shall be evacuated from the immediate area and the appropriate emergency response group(s) shall be contacted.

2.3 Contingency Procedures for Severe Weather

When severe weather is forecasted or occurs, the information shall be immediately relayed to the PEC. In the case of a tornado sighting, the PEC shall institute emergency evacuation procedures, and all personnel shall be directed to proceed indoors after completing appropriate shutdown procedures. In the case of a tornado warning, or lightning storm, the PEC shall have operations stopped and direct all personnel to stand by for emergency procedures. Other types of weather or weather induced conditions (e.g., hurricane or flooding) for which long range prediction is available may also require positive action as identified herein.

When the severe weather has passed, the PEC shall direct the Remediation Contractor to inspect onsite equipment to ensure its readiness for operation prior to restarting operations. If an inspection indicates a fire, explosion, or release has occurred as the result of a severe weather condition, the contingency procedures for those events shall be followed.

2.4 Contingency Procedures for Physical Injury to Workers

Regardless of the nature and degree of the injury, the PEC shall be notified of all injuries requiring first aid treatment of any kind. A report of the injury or incident shall be completed by the PEC.

Upon notification that a worker has been injured, the PEC shall immediately determine the severity of the accident, and whether the victim can be safely moved from the incident site. Local medical assistance shall be requested immediately, if appropriate.

Minor injuries sustained by workers shall be treated onsite using materials from the first aid kits. Whenever possible, such treatment shall be administered by trained personnel in a “clean” support zone. Examples of minor injuries include small scrapes and blisters. Minor injuries would not be expected to trigger implementation of the contingency plan.

A major injury sustained by a worker will require professional medical attention at a hospital. The PEC shall immediately summon an ambulance and contact the hospital to which the injured worker will be transported. The PEC shall notify NYSEG project manager as soon as practical. The hospital and ambulance should be advised of:

- The nature of the injury.
- Whether the injured worker will be decontaminated prior to transport.
- When and where the injury was sustained.
- The present condition of the injured worker (e.g., conscious, breathing).

2.5 Contingency Procedures for Chemical Injury to Workers

Injuries involving hazardous chemicals or symptoms of severe chemical overexposure shall result in implementation of the Contingency Plan. Upon notification that a chemical injury has been sustained or severe symptoms of chemical exposure are being experienced, the PEC shall notify the hospital and ambulance of the occurrence. The PEC shall provide, to the extent possible, the following information:

- The nature of the injury (e.g., eyes contaminated)
- The chemical(s) involved
- The present condition of the injured worker (e.g., conscious, breathing)
- Whether the injured worker will be decontaminated prior to transport
- When and where the injury was sustained

The victim(s) shall be immediately removed from the incident site using appropriate personal protective equipment (PPE) and safety equipment. Rescuers shall check for vital signs and, if possible, remove contaminated outer clothing. If the victim's eyes have been contaminated, personnel trained in administering first aid shall flush the victim's eyes with eyewash solution until the emergency response team arrives.

Details on the nature of the contaminant and methods for treating exposure or injury can be obtained from the SDSs or Occupational Health Guidelines.

3 EMERGENCY EVACUATION PROCEDURES

In the event that emergency conditions require evacuation, the site and offsite evacuation procedures described in the following subsections shall be implemented.

3.1 Site Evacuation Procedures

If an emergency occurs that requires the evacuation of an onsite area to ensure personnel safety, including (but not limited to) fire, explosion, severe weather or hazardous waste/material spills, or a significant release of vapors into the atmosphere, an air horn shall be sounded on the site by the nearest person aware of the event. The horn shall sound continuously for approximately 15 seconds, signaling that immediate evacuation of all personnel from the area is necessary, as a result of an existing or impending danger. In areas where only two or three people are working side by side, and the need to evacuate can be communicated verbally by the nearest person aware of the event, the air horn shall not be necessary.

All heavy equipment in the area shall be shut down. Under no circumstances shall incoming visitors (other than emergency response personnel) be allowed to enter any area where an emergency is occurring. Visitors or observers and all non-essential personnel present in the area of an emergency shall be instructed to evacuate the area immediately.

Remediation Contractor(s) emergency coordinators and/or health and safety officers (as designated) will be responsible for ensuring that emergency response requirements specific to their own operations are carried out. These parties shall report their activities to the PEC. The PEC, however, has final authority regarding all emergency response activities.

All non-essential personnel shall evacuate the emergency areas and notify personnel in adjacent areas to evacuate also. The evacuated workers shall assemble at the site construction office trailer, where the PEC shall give directions for implementing necessary actions. In the event that the primary assembly area is involved, unapproachable, or unsafe due to the event, evacuated workers shall assemble at the alternate assembly area identified by the PEC.

Personnel are to avoid encountering smoke/gas plumes as practicable during evacuation and assembling.

The PEC shall take charge of all emergency response activities and dictate the procedures that will be followed until emergency personnel arrive. The PEC shall assess the seriousness of the situation, and direct whatever efforts are necessary until the emergency response units arrive.

After initiating emergency response procedures, the PEC shall assign appropriate personnel to check and attempt to ensure that access roads are not obstructed. If traffic control is necessary (e.g., in the event of a fire or explosion), personnel who have been trained in traffic control procedures and designated at the project safety meeting shall take over these duties until emergency units arrive.

The PEC shall remain at the site to provide any assistance requested by emergency response personnel when arriving to deal with the situation. The PEC shall have the authority to shut down any part or the entire project after an emergency, until the PEC deems it safe to continue operations. The PEC shall

dictate any changes in project safety practices, which are made necessary by the emergency that has occurred, or are required for preventing further emergencies.

3.2 Offsite Evacuation Procedures

If the PEC deems that human health beyond the site limits is at risk, the PEC shall notify the appropriate agencies and departments (e.g., NYSEG Project Manager, police, NYSDEC, fire department) of the need, or potential need, to institute offsite evacuation procedures. The PEC shall provide, at a minimum, the following information:

- His or her name and telephone number.
- Name and address of facility.
- Time and type of incident (e.g., release, fire).
- Name and quantity of materials or materials involved, to the extent this information is known.
- The extent of injuries, if any.
- The possible hazards to human health or environment, and cleanup procedures.

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APPENDIX F

Noise Monitoring Plan

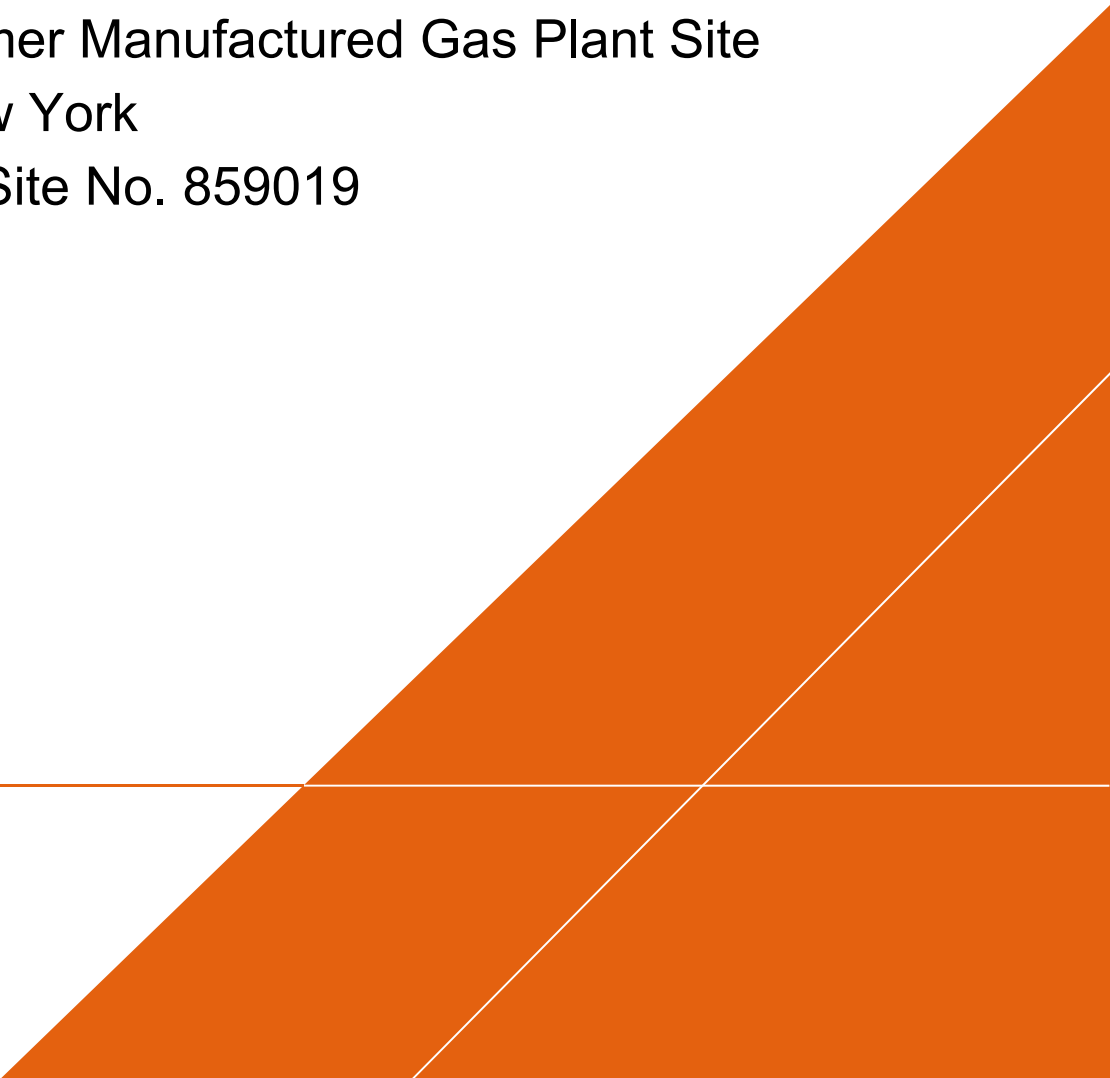


NYSEG

NOISE MONITORING PLAN

Clyde Former Manufactured Gas Plant Site
Clyde, New York
NYSDEC Site No. 859019

May 2019

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NOISE MONITORING PLAN

Clyde Former Manufactured Gas Plant
Site

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ACRONYMS AND ABBREVIATIONS

| | |
|--------|---|
| dBa | decibels |
| DER-10 | Department of Environmental Remediation Technical Guidance for Site Investigation and Remediation |
| MGP | Manufactured Gas Plant |
| NMP | Noise Monitoring Plan |
| NYSDEC | New York State Department of Environmental Conservation |
| NYSEG | New York State Electric and Gas |
| TWA | time weighted average |

1 INTRODUCTION

1.1 General

This Noise Monitoring Plan (NMP) has been prepared to support the implementation of remedial activities at the New York State Electric and Gas (NYSEG) Clyde Former Manufactured Gas Plant (MGP) Site (site) located in Clyde, New York. The New York State Department of Environmental Conservation (NYSDEC), Department of Environmental Remediation Technical Guidance for Site Investigation and Remediation (DER-10) requires that noise monitoring and mitigation be considered as part of the remedial design process, and that noise levels that would trigger alternate construction methods should be included in the remedial design.

This site-specific NMP describes the requirements for noise monitoring activities to be conducted during implementation of the remedial activities described in the Remedial Design (Arcadis, 2018), and identifies action levels and the general process and responsibilities for noise mitigation, if required.

1.2 Background

This section presents a summary of site background information, including a description of the site location and physical setting, as well as a brief site history.

1.2.1 Site Location and Setting

The Clyde former MGP site is located along the west side of Sodus Street (approximately 16 Sodus Street) in the central business district of the Village of Clyde. The site primarily consists of two parcels of land that are owned by NYSEG, herein referred to as the western and eastern parcels.

The NYSEG Clyde Electrical Substation is located on the western parcel. The majority of the former MGP features were in this area. The substation is surrounded by a perimeter fence and access is limited to NYSEG employees. Inside the substation fence, the ground surface is covered by gravel. Outside of the fenced area to the west and south, the ground surface is covered by weeds, brush, and small trees. To the east and north of the substation, the ground surface is covered by asphalt pavement and a gravel driveway that provides access to the substation from Sodus Street.

The eastern parcel of the NYSEG property was purchased in 2006 and is vacant land covered by weeds, brush, and small trees, except for the gravel access driveway for the substation along the northern side and northwestern corner of the parcel. The foundation for a former gas holder remains within this parcel. The remains of a concrete building foundation (not related to the MGP) is visible at the ground surface at the southeastern portion of the eastern parcel.

Abutting the site to the north are three parcels of land (from east to west): an irregular shaped area of land that forms the southwest portion of a property occupied by the Veterans of Foreign Wars; a vacant lumberyard; and vacant land owned by the Village of Clyde. During the time of MGP operations, the Erie Canal and towpath were present in the southern portions of these three parcels. The Erie Canal channel was filled-in with construction debris by the Village of Clyde in the late 1930's.

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To the south of the site is an active railroad corridor operated by the CSX Railroad Company – New York Central Lines, Limited Liability Company. To the south of the railroad corridor is the New York State Barge Canal. The section of the NYS Barge Canal in the Village of Clyde is a “canalized” section of the former Clyde River. The former river channel was excavated/modified to form the canal approximately five years following decommissioning of the MGP.

Directly to the east of the site is the Village of Clyde Museum which is operated by the Galen Historical Society. To the southeast of the site is a building which is currently being used as a bottle and can return (redemption) center. Sodus Street is located to the east of these buildings.

To the west of the site is a second parcel of land owned by the Village of Clyde. This parcel is currently vacant land and is covered by weeds, brush, and small trees.

The entire site and all the adjacent offsite parcels discussed above are zoned for Commercial Use (C1 Designation) by the Village of Clyde. The nearest residential property is approximately 360 feet to the north on Columbia Street.

Land use in the surrounding area is mixed, with industrial and commercial operations immediately north, east, and west. Railroad tracks and the New York State Barge Canal are located immediately south.

The primary components of the NYSDEC-selected site remedy include excavation and groundwater treatment. These technologies require the use of noise generating equipment to complete their installation. Excavation bracing will be installed along the perimeter of the excavation area, approximately 65 feet from the nearest building (Bottle Return Center). In addition, excavation will be performed using conventional construction equipment (e.g., excavator) to complete soil removal. Other construction-related vehicles (e.g., transportation vehicles, front-end loaders) and equipment will be operated onsite.

The Village of Clyde noise ordinances do not include maximum noise levels for short-duration environmental construction activities.

This NMP describes the requirements for noise monitoring activities to be conducted during implementation of these remedial activities and identifies the general process and responsibilities for noise mitigation, if it is required.

2 NOISE MONITORING AND MITIGATION

The noise monitoring and mitigation strategy at the site includes the following elements:

- Pre-mobilization background noise monitoring
- Noise monitoring during remedial activities
- Noise mitigation procedures

Each of these elements is presented below.

2.1 Pre-Mobilization Background Noise Monitoring

Monitoring data are needed to assess the baseline noise conditions, noise levels associated with site activities, and the effectiveness of any implemented mitigation measures. Prior to mobilization of remediation equipment, the Remediation Contractor's third party consulting firm (Consultant) will measure background noise along the perimeter of the site. A total of four continuous noise monitors will be deployed along each of the four property limits (i.e., north, east, south, west) (actual locations will be selected in the field based on conditions encountered and NYSDEC concurrence). Continuous monitoring will be recorded during the anticipated duration of the construction work day (from approximately 7:00 am to 6:00 pm) over a three day period. The noise monitoring data will be summarized by the Remediation Contractor's Consultant (i.e., data tables and plotted graphically) and submitted to NYSEG and the NYSDEC prior to mobilization of remedial equipment. Data will include the "A-weighted" frequency response scale (decibels [dBA] scale). The dBA scale simulates the response to human ear sound levels and has been given prominence as a means for estimating annoyance and for speech interference caused by noise. The equivalent sound level (Leq) (the A-weighted equivalent continuous sound level) is the value of a steady-state sound that has the same A-weighted sound energy as that contained in the time-varying sound. The Leq is a single sound level value for a desired duration, which includes all of the time-varying sound energy during the measurement period. Noise measurements will be performed using the A-weighting network and the "slow" response of the sound level meter and will be calculated over a 1-hour measurement period. This data will form the baseline for noise monitoring data at the site and will be representative of ambient (existing) sound levels for the area. Activities that generate background noise (e.g., vehicular traffic, trucks, busses, car horns, loud car stereos, car alarms, brakes squealing, ambulance/police sirens, off-site construction work, low-flying planes, general city background noise, etc.) observed during noise monitoring will be noted in the summary.

The Remediation Contractor's Consultant will use a Quest Q-500 dosimeter or Larson Davis 820 Noise Meter, or similar, capable of measuring from approximately 40 – 140 dBA, to conduct the noise monitoring. The instrument will be capable of recording instantaneous sound exposure levels and time weighted averages (TWAs). The measurement microphone will be fitted with a wind screen and will be located approximately 5 feet above ground surface. Noise monitoring will not be performed during inclement weather (e.g., downpours) or during excessive wind conditions (greater than approximately 15 miles per hour), as sheet pile driving would be suspended during these conditions.

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As stated above, the results from the pre-mobilization background noise monitoring will be submitted to NYSEG and NYSEG's Remediation Engineer. The report will provide both the instantaneous sound exposure levels and TWAs during the anticipated duration of the construction work day (from approximately 7:00am to 6:00pm).

2.2 Noise Monitoring During Remedial Activities

This section presents the noise monitoring procedures that the Remediation Contractor's Consultant shall follow during implementation of the remedial activities at the site. The remedial activity that is anticipated to generate the highest noise levels is installation of the excavation support system (i.e., soldier pile and lagging wall). The Remediation Contractor's Consultant will conduct continuous perimeter noise monitoring during installation of the excavation support system; noise monitoring will not be conducted during soil or excavation activities.

The locations of the perimeter noise monitoring stations will be selected based on:

- The location of remedial activities being conducted.
- Approval of the NYSDEC, NYSEG, and the Remediation Engineer

At a minimum, noise monitoring will be conducted at the two closest site boundaries.

The Remediation Contractor will use a Quest Q-500 dosimeter or Larson Davis 820 Noise Meter, or similar, capable of measuring from approximately 40 – 140 dBA, to conduct the noise monitoring. The instrument will be capable of recording instantaneous sound exposure levels and TWAs. The measurement microphone will be fitted with a wind screen and will be located approximately 5 feet above ground surface. Noise monitoring will not be performed during inclement weather (e.g., heavy rainfall) and/or when construction activities are suspended.

The Remediation Contractor will physically monitor the noise measurement results during initial excavation support system installation activities. Noise measurements will be performed using the A-weighting network and the "slow" response of the sound level meter and will be calculated over a 1-hour measurement period. The Remediation Contractor's Consultant will provide a report to NYSEG and the Remediation Engineer at the completion of the construction activities (i.e., tables and plotted graphically). This report will be included as an appendix in the Remediation Engineer's *Final Engineering Report*.

2.3 Noise Mitigation Procedures

The Remediation Contractor will be required to provide noise mitigation/reduction measures, or combination of measures if noise levels are exceeded. Potential mitigation activities that the Remedial Contractor may employ include:

- Use of moveable acoustic curtains to shield the equipment
- Restricting times that high noise activities can be conducted

The Remedial Contractor shall employ adequate measures, or combination of measures, during installation of the excavation support systems to maintain noise levels produced by construction equipment to safe and tolerable limits at the site boundaries. If installation of the excavation support

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system causes exceedances in sound levels at the site perimeter, installation activities shall be halted and the Remedial Contractor and Remedial Engineer shall select and implement noise reduction measures such that work can be conducted at acceptable noise levels. The implementation details, feasibility, and the expected effectiveness of the noise reduction measure will be discussed with the NYSDEC, NYSEG, and the Remedial Engineer.

The following action noise threshold values will be used to assess the effectiveness of mitigation activities/techniques:

- **“Temporary Halt” Noise Threshold Value of 80 dBA Leq.** If this action level is exceeded over a 1-hour measurement period (i.e., TWA) work will be temporarily halted, if necessary, while the apparent cause is investigated and corrective actions are taken. If the cause is related to equipment or operational factors, then these would be corrected and work resumed. If this level is exceeded due to site conditions (e.g., obstructions in the ground that cause sheet pile refusal), either mitigation methods will be employed, the obstruction will be removed, or the drive will continue at the next sheet position.
- **“Stop Work” Noise Threshold Value of 85 dBA Leq.** If this action level is exceeded over a 1-hour TWA, a review into the cause will immediately be investigated. Work would stop and an evaluation of an appropriate mitigation measure (or effectiveness of an implemented measure) would be reviewed. The Remedial Contractor and Remedial Engineer would propose an appropriate (or alternate) noise mitigation measure. If 85 dBA is exceeded due to obstructions in the ground which cause refusal of sheets, either the obstruction will be removed or the drive will be stopped and the next sheet position will be attempted.

3 REFERENCES

Clyde. 1984. Village of Clyde Municipal Code, Chapter 114 - Noise Ordinance. Adopted by the Board of Trustees of the Village of Clyde on June 21, 1984.

NYSDEC. 2010. *DER-10, Technical Guidance for Site Investigation and Remediation*. May 2010.

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A decorative graphic consisting of three thin orange lines. One line is horizontal, extending from the left edge of the page towards the right. Two other lines are diagonal, starting from the bottom left and extending towards the top right, intersecting the horizontal line.